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ABSTRACT

This review focuses on higher education in Mexico and also covers the upper secondary level including the broader range of education and training courses and institutions for students who complete basic education. Part 1 provides background data on Mexico and its system of higher education. Chapter 1 includes a general description of Mexico today including geography, population characteristics, socioeconomic trends and the position of higher education. Chapter 2 is concerned with the history of higher education, the philosophy of current educational policies, laws and regulations, the structure of higher education and its financial support. Chapter 3 addresses the history and structure of higher education in Mexico. Chapter 4 describes performance and trends including growth in enrollment, faculty, and activities. Chapter 5 considers governance. Chapter 6 looks at challenges to higher education in Mexico. Part 2, the Examiners' Reports, analyzes the context of the debate on educational reform occurring in Mexico, describes the unique system of post-compulsory education, describes the central issues for reform, and describes the instruments used for evaluation. The major conclusions include the need for: equity, differentiation and flexibility, quality, staff development, change in method of financial support, and creation of a national upper secondary education system. (JLS)

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REVIEWS OF NATIONAL POLICIES FOR EDUCATION

MEXICO

Higher Education

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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FOREWORD

This is the first report on Mexico in the long standing series of OECD Reviews of national policies for education. The analysis focuses on higher education, but, considering the particular structures of the educational system in Mexico, also covers the upper secondary level – *educación media superior*. The report is in two parts: the Background Report prepared by the Mexican authorities and the OECD Examiners' Report. This review was made possible thanks to a special grant from the Mexican authorities and specific contributions from the Secretariat for Public Education.

The OECD examiners were Mr. Claude Pair (France), Rapporteur, Mr. John Mallea (Canada), Mr. Wolfgang Mönikes (Germany) and Mr. Eric Esnault (OECD Secretariat).

This volume is published on the responsibility of the Secretary-General of the OECD.

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LIST OF ABBREVIATIONS

ANUIES	National Association of Universities and Institutions of Higher Education
CAM	Teacher Refresher Training Centers
CAPFCE	Federal School Construction Programme Administrative Committee
CBETA	Centers for Upper secondary Education in Agricultural Technology
CBETIS	Centers for Upper Secondary Education in Industry and Technology
CBTF	Centers for Upper secondary Education in Forestry
CCH	College of Sciences and Humanities
CCR	Regional Cultural Corridors
CECATIS	Centers for Industrial Training
CECYT	Centers for Scientific and Technological Studies
CENEVAL	National Centre for the Evaluation of Higher Education
CEPPEMS	State Commissions for Upper Secondary Planning and Programming
CET	Centers for Technological Studies
CETIS	Centers for Technological and Service Studies
CIDE	Center for Economic Teaching and Research
CIEES	Interinstitutional Committee for the Assessment of Higher Education
CINVESTAV	Center for Research and Advanced Studies
COFAA	Academic Activity Operations and Development Commission
COLMEX	College of Mexico
CONACULTA	National Council for Culture and Arts
CONACYT	National Council for Science and Technology
CONAEMS	National Commission for Upper Secondary Education
CONAEVA	National Higher Education Assessment Commission
CONAFE	National Council for Educational Development
CONALEP	National College for Technical Profesionnal Education
CONCERTEC	National Committee for Technological Modernisation
CONPES	National Coordinating Council for Higher Education Planning
CONPPEMS	National Co-ordination for Planning and Programming Upper Secondary Education

COSNET	Council for the National System of Technological Education
CUPIA	Council of Public Universities and Similar Institutions
DGEP	General Directorate of Public Education
DGES	General Directorate of Higher Education
DGETA	General Directorate of Agricultural Technological Education
DGETI	General Directorate of Industrial and Technological Education
DGIT	General Directorate of Technological Institutes
ENEP	National Schools for Professional Education
FIDETEC	Fund for Technology Modernisation
FIMPES	Federation of Private Mexican Institutions of Higher Education
FOMES	Fund for Higher Education Modernisation
FORCCyTEC	Fund for Reinforcing Scientific and Technological Ability
IHE	Insitutions of Higher Education
INEA	National Institute for Adult Education
INI	National Indigenous Institute
IPN	National Polytechnic Institute
ITAM	Autonomous Technological Institute of Mexico
ITESM	Technological Institute of Monterrey
IUSE	Institutions of Upper Secondary Education
PACIME	Programme to Support Science in Mexico
PAN	National Action Party
PARE	Programme Against Educational Backwardness
PCD	Teaching Career Programme
PME	Programme for the Modernisation of Education
PND	National Development Plan
PNR	National Revolutionary Party
PRD	Party for Democratic Revolution
PRI	Institutional Revolutionary Party
PROIDES	Integral Programme for the Development of Higher Education
PT	Labour Party
RANTEC	National Academic Teledata and Computer Network
RTN	National Technological Network
RUTyC	Teledata and Communications University Network
SEIT	Under-Secretariat for Technological Education and Research
SEP	Secretariat of Public Education
SES	Higher Education System
SESIC	Under-Secretariat for Higher Education and Research
SINAPPES	Permanent National Higher Education Planning System
SNI	National System of Researchers
SNTE	National Union of Education Workers
SUPERA	National Programme for Upgrading Higher Education Academic Staff

UAA	Autonomous University of Aguascalientes
UAM	Autonomous Metropolitan University
UANL	Autonomous Universities of Nuevo León
UdeG	University of Guadalajara
UECyTM	Unit for Marine Science and Technology
UIA	Iberoamerican University
UNAM	National Autonomous University of Mexico
UPN	National Teaching University
ZMCM	Metropolitan Area of Mexico City

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PERMANENT DELEGATION OF MEXICO TO THE OECD

Dr. Carlos Hurtado	Ambassador

Part One

HIGHER EDUCATION POLICY IN MEXICO

Background Report prepared by the Mexican authorities

MEXICO TODAY

Higher education in Mexico is determined by its geography, population dynamics, cultural and political history, the economic differences between regions and social groups and also by differences in student demands, first degree and post-graduate programmes, teaching staff, planning and funding, and the management and steering of institutions.

GEOGRAPHICAL FEATURES AND NATURAL RESOURCES

Mexico lies between latitudes 33 and 15 north and longitude 87 and 177 west; it is flanked in the east by the Gulf of Mexico and the Caribbean Sea, and in the west by the Pacific Ocean and the Gulf of California. In the north it shares a border with the United States of America, and in the south with Guatemala and Belize. This area of some 1.97 million sq. km. is a geographical, cultural and ecological kaleidoscope. The neo-volcanic axis which follows the 19th and 20th parallels is the backbone of central Mexico, which is composed of the high plateau with its mountains and valleys. The high-lying valleys and basins have two slopes, one toward the Atlantic and the other toward the Pacific, with temperate and hot regions that stretch along 11 000 kilometres of coastline. Mexico's biological diversity is shown by the presence of thousands of plant and animal species. The country ranks fourteenth in the world in area, first in reptile species, second in mammals and fourth in plants and amphibians. There are estimated to be 30 000 species of vascular plants in Mexico, while the range of animal species and varieties is also very wide.

It was in central Mexico that agriculture first developed and Mesoamerican civilisations settled and grew. Unbalanced economic growth and the concentration of population in just a few cities, coupled with the process of industrialisation, centralisation and rapid urbanisation have in many cases meant the irrational use of natural resources and consequently environmental degradation.

POPULATION

Pre-Hispanic Mesoamerica was densely populated. There are several different estimates of numbers, but the one most widely accepted is that at the end of the

fifteenth century there were about 15 million inhabitants. During the sixteenth century, as a result of the Conquest, colonisation and diseases brought from Europe, the native population fell to three million. The population that emerged later was the product of mixed Indian and Spanish parentage. In the three centuries that the Colony lasted the population did not rise to above five or six million, concentrated in the central area of the country. The wars of Independence and Reform in the nineteenth affected demographic growth, and the population stood at 12 million by the end of the century. The 1910-1920 Revolution changed the situation. At the end of this period the birth rate reached a high level and the death rate fell due to the emergence of new political institutions, economic and social development and to the introduction of new health technologies. The population grew from 13.6 million in 1910 to 89.6 million in 1994.

Mexico's migration balance is negative. During the seventies, two or three people per thousand left the country. Migration was mainly to the United States, but the figure rose in the following decade to reach its peak of four per thousand at the end of the period. In 1994 the figure was estimated at 36 migrants for every 10 000 inhabitants. In 1973, the government established the national population and family planning policy with the co-operation of the Ministry of Health, the Ministry of the Interior, other federal government departments and private organisations. As a result of this policy and of migration, the population growth rate dropped from 3.2 per cent in 1970 to 2.05 per cent in 1994. Despite this fall, the population grew from 50.6 million in 1970 to 89.6 million in 1994.

Because of the high growth rates that prevailed until the late sixties, the population pyramid was one where the youngest generation groups close to the bottom were larger than those at the top. In 1994 there was a change in the shape of the pyramid: the population aged between under one year and 14 dropped 36 per cent, that between 15 and 64 increased 59.8 per cent and the over 65 age group rose 4.2 per cent. The average age of the population is 21.6 years. A natural result of current population dynamics in Mexico will be an aging population over the coming decades. In 1994 the two to five-year-old population, possible candidates for pre-school education, numbered approximately 7 million, or 8 per cent of the total for the country. In turn, the population aged between 6 and 14, potential candidates for primary education totalled almost 19 million, equivalent to 21 per cent of the total. The 15-25 age group – about 20 million or 22 per cent of the population – consists of possible candidates for upper secondary or higher education. Some 8 million young adults between the ages of 15 and 25 work or are looking for work, and this reduces real demand.

Mexico is a multiethnic country with a mestizo majority and an extremely varied indigenous minority made up of 57 ethnic groups. The size of this minority is difficult to determine, and population dynamics vary from one group to another.

According to the 1970 census there were 3.7 million Indians, while data supplied by the 1990 census indicates 6.4 million, meaning a growth rate of almost 3 per cent.

Two stages can be seen in the fertility rate. In the first, from 1900 to 1970 it was high – between 40 and 46 births per thousand inhabitants. In the second stage, from 1971 up to now, the gross birth rate began to decline to reach 26.3 births per 1 000 inhabitants. Educational level is a factor closely linked to the fertility rate. In the period 1989-1991 the overall reproduction rate for women without any schooling was 5.4 children, while that for women with post-primary education (secondary, upper secondary, higher) was 2.5. At a level intermediate between the two, women who had not completed primary education averaged 4.7 children, and those who had, 3.3.

Mexico's death rate started to fall in the thirties, but it was between 1940 and 1950 that the drop was really noticeable: from 23 deaths per thousand inhabitants to 16. By 1980 the death rate had fallen to seven per thousand, while the estimated figure for 1994 is 5.1. Life expectancy at birth rose steadily between 1930 and 1994 and today is over 71 years.

Illnesses affecting the elderly, degenerative diseases and cancer are becoming relatively more important, as are conditions caused by accidents or violence, while the incidence of fatalities from infectious diseases has decreased. There have also been considerable falls in the infant mortality rate: at the end of the last century there were 300 deaths before the age of one for every thousand live births. This figure had dropped to 100 per thousand by the middle of this century and stood at 61 in 1977. This indicator is expected to be 33 in 1994.

According to the 1990 census, 38 per cent of the total population live in the northern and southern states of the country, which together cover 77 per cent of national territory. The central states, which account for 23 per cent of total area, contain 62 per cent of the population. Over 19 per cent of Mexicans live in the metropolitan area of Mexico City (ZMCM). Four cities are home to 27 per cent of the population: the ZMCM, Guadalajara, Monterrey and Puebla. This population concentration has led to economic, social and political imbalance.

As a result of internal migration and the process of urbanisation, in 1970 the population living in localities with more than 2 500 inhabitants was 58.6 per cent of the total. By 1990 the proportion had risen to 71.3 per cent. If the trends already observed of both growth and migration continue, Mexico's population will grow at an increasingly slower rate over the next few decades, with annual rates of 1.9 per cent in 1995, 1.5 per cent in the year 2000, and 1.2 per cent in 2010. The population is expected to reach 100 million in 2000 and 112 million in 2010.

The absolute and relative numbers in the most populous age groups will change. The population aged between 0 and 14 will be 33.2 per cent of the total in the year 2000, but will drop to 28.4 per cent in 2010. The 15-64 group will continue

growing, to account for approximately 62 per cent of the population in 2000, rising to 65 per cent by 2010. Finally, the group aged 65 and over will come to represent 5 per cent in the year 2000, and 6 per cent in 2010.

The birth rate from 1994 to the beginning of the next century is expected to continue on the downward trend that has been observed in recent years. Projections for the year 2000 place the gross death rate at five per thousand inhabitants. However, this may show a slight increase because of population ageing, which will be reflected in a figure of 5.2 deaths per thousand by 2010. Life expectancy will probably continue rising until it reaches 74 years in 2000, and 79 in 2030. From 1994 to 2010 the population of working age will increase considerably because the intermediate age group (15-64) will make up two thirds of the total population.

Rapid urbanisation is a feature of this last decade of the century, but the non-urban population is still widely scattered. Medium sized cities (500 000 to one million inhabitants) continue to grow at a faster pace than the large concentrations of Mexico City, Guadalajara, Monterrey and Puebla. The ZMCM is tending to halt its growth in relative terms, but because of conurbation and fusion with other nearby cities such as Toluca, Cuernavaca, Texcoco, Pachuca and Puebla the area seems set to become one of the world's largest megalopolises.

HISTORY AND POLITICAL INSTITUTIONS

The oldest human remains found in Mexico date back more than 20 000 years. The first farmers appeared in 3500 B.C. and the following century saw the emergence of permanent settlements and tribally-based social organisation that led to the Olmec civilisation. This culture developed ceremonial centres, writing, a calendar and the concept of zero, making it the "mother" of the urban cultures of the Classic period (200 B.C. – 800 A.D.).

When the Spanish arrived there was wide variety in cultures, although some of them shared common traits. The Mexica (Aztecs) had created a State that exerted military domination over an extensive area of Mesoamerica, while the Mayas of Yucatan had brought their culture to a peak. The civilisations of Mesoamerica were at a disadvantage when they came face to face with Western culture because they were isolated and had no draft animals or beasts of burden. The Viceroyalty of New Spain was established in 1535 with the introduction of a dual political and legal system: one for the Spanish community and one for the Indian nation. Prompted by the search for precious minerals, the Spanish lost no time in crossing the frontiers of Mesoamerica. They began to fight the nomad Chichimecs, who were more warlike and independent than the other sedentary Mesoamerican tribes, and built fortified haciendas and villages. The declining numbers of the native population and the support that some clerics gave them led to enslavement of Indians being forbidden. This in turn resulted in the importation of slaves from Africa.

By the seventeenth century, prosperous cities and the beginning of a criollo (European born in Mexico) sense of identity helped to affirm the Viceroyalty, which matured in the eighteenth century. The mineral wealth of New Spain was supplemented by rich farming and cattle raising and a flourishing trade that propelled it on to world markets. Spain's attempts to modernise its empire and so make it more productive and profitable led to a social and economic reorganisation that in turn caused unrest. This coincided with the Age of Enlightenment, with its ideas of liberty and freedom of political rights.

The Spanish monarchy fell in 1808 for several different reasons, and Mexico's war for Independence began in 1810. After more than ten years of fighting, the prosperity of the eighteenth century had vanished. The signs of decadence were obvious: half the labour force was dead, mines were flooded and fields abandoned, trade and industry were bankrupt. Faced with this crisis, the population welcomed the promulgation of Independence in Iguala in 1821, but life was difficult at the beginning for the Republic. The enlightened class that was founding the new State tried to promote education and the economy to develop resources and create a homogeneous society in an attempt to build a unified nation.

However, the country had inherited a regionalism from the Viceroyalty that resisted all the centralising efforts of the Bourbons. In an attempt to make this possible and preserve unity a federal system was introduced that resulted in weak national government.

The situation was made worse by a bankrupt treasury and an unequal, divided population concentrated in the centre and south of a territory that eventually covered 4.5 million sq. km. when Central America became part of it in 1822. These conditions were not conducive to a strong national State. Liberals and Conservatives proposed different political solutions for the problems: monarchy, republic (federal and central), and dictatorship.

Mexico's wealth awoke the interest of European powers and the expansionist ambitions of the United States. The country fought wars against Spain (1829), North American settlers in Texas (1836), France (1838), the United States (1846-1848, when it lost almost half of its territory) and France again (1862-1867), which established an empire with the help of Mexican Conservatives. Liberal president Benito Juárez restored the Republic and, by his triumph in 1867, laid the foundations for the viability of the Mexican state.

The Liberal efforts to put an end to political instability ended in a dictatorship. Porfirio Díaz, one of the Liberal leaders, remained in the presidency from 1876 to 1911. Under his administration, investment was encouraged, most of the nation's railroad system built, and industry, mining, agriculture and trade all grew. The country was modernised, particularly in urban areas, but social inequality and

injustice became worse. The population was still concentrated in the centre and south, was predominantly rural, and the illiteracy rate was 78 per cent.

Groups opposed to the dictatorship organised themselves under Francisco I. Madero, who launched the rallying cry of "effective suffrage, no re-election". The Mexican Revolution broke out on November 20, 1910. Díaz was overthrown and expelled from the country; elections were held and Madero won the office of president in 1911. But the country did not find peace. Emiliano Zapata, who defended the agrarian rights of villages, rose up in arms in Morelos, and Orozco did the same in the north. Instability returned, awakening the fears of North American investors, whose diplomatic representatives furthered a military coup. With help from the United States, Victoriano Huerta established a dictatorship and had President Madero and Vice-president Pino Suárez assassinated, setting off the Revolution. This had two sides to it: the armed struggle against the military dictator and the diplomatic one to defend the country's sovereignty against the North American government's attempts at intervention.

When the military dictatorship had been overthrown, the revolutionary ranks divided and there was a struggle between constitutionalists and conventionists. The constitutionalists prevailed, and their leader Venustiano Carranza formed a Congress that approved the 1917 Constitution which is still in force today. It ratified political structure: representative, democratic and federal. It also enshrined new ideals of economic and social equality: agrarian reform, guaranteed labour rights, the restoration of the State's ownership of the subsoil, and secular education for all.

To strengthen the State, which had to overcome the legacy of the past, democratise the country and defend it against foreign intervention, the Constitution kept the traditional division of power into three branches, executive, legislative and judicial. Many prerogatives were concentrated in the federal executive power in the hands of a president elected (since 1934) by direct, universal vote for six years without the right to reelection.

After almost ten years of civil war, the new government was faced with the challenge of reorganising the country. In 1921, over 70 per cent of the economically active population still worked in the agricultural sector, and only 34 per cent of the population over 15 years of age was literate. In addition to this backwardness there was the destruction caused by the Revolution. It is estimated that the population fell by some 5 per cent between 1910 and 1921 due to violence, an epidemic of Spanish flu, and migration. During the same period, the economy slumped in certain sectors such as mining, which fell by 60 per cent, but others, for example oil and transport showed increased resources. These last helped to bring about an annual growth of 7 per cent in this period, although the price system and a major part of the infrastructure were in crisis.

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The key aims of post-Revolutionary governments were to pacify the country, protect sovereignty, re-establish relations with the United States, stabilise prices and restore economic activity. During this period, public finances were restructured, federal administration reorganised, educational opportunities widened, and new institutions such as the Banco de México, the National Banking Commission, and the Banco de Crédito Agrícola were created. Investment was increased in infrastructure, irrigation and roads. These measures were important strides toward integrating the country and creating the basic conditions for economic and social development.

The National Revolutionary Party (PNR) was founded in 1929, which regularised change of government and settled any disputes arising from the presidential succession. After two successive changes this party became what is now the Institutional Revolutionary Party (PRI) which currently has the majority in all elected posts and representations at the local, state and federal levels. The other main political parties are the National Action Party (PAN), the Party for Democratic Revolution (PRD) and the Labour Party (PT).

For the period 1994-1997 the party composition of the Senate is 95 senators from the PRI, 25 from the PAN and eight from the PRD. In the House of Representatives the PRI has 302 congressmen, the PAN 118, the PRD 70 and the PT 10.

SOCIO-ECONOMIC TRENDS AND OUTLOOKS

Mexico's traditionally difficult relations with the United States improved as a result of World War II. By isolating national industry from international trade and creating a demand for raw materials this conflict led to greater growth in the manufacturing sector and the straightening of the entrepreneurial and working classes. The external debt was renegotiated, loans past due since the time of the Revolution were renewed, and the export of minerals and other raw materials from Mexico increased.

The government felt that for a poor country the best way to raise living standards was to increase productivity, in association with industrial development.

The strategy worked: average growth from 1958 to 1970 was just over 7 per cent, with inflation at about 4 per cent. In some years, for example 1964, growth reached 11.7 per cent and inflation 5 per cent. The output of the manufacturing industry grew 4.8 times, and by 1970 this sector employed 24 per cent of the economically active population as compared to 44 per cent in the agricultural sector. However, inequalities were created in three areas:

- Trade policy and the exchange rate inhibited exports and affected the balance of payments adversely. Industrialisation was not selective enough. As the domestic market developed, imports of intermediate and capital goods

increased without more foreign currency being available, since domestic manufactured goods found it difficult to compete with those from abroad.

- The model was based on tax exemptions, government investment in infrastructure and on goods and services provided by the State at subsidised prices. The rural sector was neglected; low prices for agricultural products led to lower investment and the stagnation of rural development. In face of the narrow tax base the dilemma was either to limit demand to support public deficit or else allow a greater deficit financed by indebtedness and inflation.
- Mexico achieved sustained economic growth, but social contrasts, urban and rural poverty and the population explosion exerted pressure on governments.

As of 1970 the government's economic policy was to reinforce the strategy of import substitution through greater state participation. Between 1970 and 1976 the economy grew at an average rate of 6 per cent annually, which made it easier for the government to negotiate with opposing social groups. Annual inflation during this government's term of office averaged 14 per cent, soaring to 33 per cent in 1974, while public deficit in 1975 was 9 per cent of Gross Domestic Product (GDP). This policy led to macroeconomic imbalances which in turn caused political conflicts and economic setbacks in 1976.

The economy showed a recovery between 1978 and 1981 due to the discovery and exploitation of oil reserves, with an annual growth of over 8 per cent. This growth was financed by oil revenues and an ever larger foreign debt. The result was a deficit in public finances, increased foreign debt and higher inflation, industry that was behind the times and a State subject to pressure to increase expenditure from business groups and workers. In 1982 the peso was devalued, causing capital flight. The government nationalised banks and introduced exchange control in an attempt to halt the economic crisis, but the effects were quite the opposite of those expected.

The adjustment of public finances and the reduction of real wages in 1983 were not enough to alter the bases of the economy. In 1985, Mexico changed its economic strategy from protectionism to trade liberalisation, and joined GATT (now the World Trade Organisation). Federal elections were held in 1988, and beginning in 1989 the government took economic reform further. Privatisation was stepped up under the new administration. The number of state-owned companies was reduced from 1 155 in 1982 to 412 by 1988 and 217 by 1992. In 1990, the privatisation of important companies such as Teléfonos de México and all commercial banks was begun. Mexico joined the international economic organisations to which it did not belong such as the Organisation for Economic Co-operation and Development (OECD) and Asia-Pacific Economic Co-operation forum (APEC). It also signed several trade agreements with other countries of Europe, Asia and South America. The

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most important was the North American Free Trade Agreement with the United States and Canada, which came into force in January 1994.

Another feature of the reform was deregulation in many areas of the economy, including transport, port services, electrical power, weights, measures and standards, tourism, and plant and animal health regulations.

HIGHER EDUCATION AND ITS SETTING

The factors mentioned in the above sector had an influence on how basic education expanded rapidly during the fifties and sixties, upper secondary in the sixties and higher education in the seventies. Education was one of the pillars of the social policy of post-revolutionary administrations. The total of students in the educational system rose from 5.2 million in 1960 to more than 25 million in the academic year 1993-94.

As a result of the extraordinary growth in the number of educational services, the professional training of teachers at all levels was difficult to control. However, important progress was made. Teacher training for basic education was raised to the status of first degree in 1984. The professional training of full-time academic staff was consolidated at the upper level and a high level of quality was achieved in the field of research, even though most teachers have not obtained academic qualifications higher than the one they teach in. University graduates led the modernisation of Mexico.

The changes also had impacts of a social nature: the greater participation of women in economic and educational activities, including advanced studies. These achievements meant a considerable improvement, though the quality was irregular, in the learning of the whole population and consequently of the labour force.

Industrialisation and rapid urbanisation concentrated a majority of the population in a few large and medium sized cities, and this influenced the distribution of new programmes and opportunities in higher education. As a result there are problems of unequal coverage. The scarcity of opportunities affects a group of states. Quintana Roo, Chiapas, Guanajuato, Oaxaca, Hidalgo, Tabasco, Michoacán and the State of Mexico have the lowest rates of enrolment in higher education and also the rates of intake from upper secondary into higher education are clearly below the national average.

Another consequence of accelerated growth was the rapidity with which institutions had to respond to higher student enrolment. In many cases there was a certain degree of improvisation in the recruitment of teachers, and this had repercussions on the quality of instruction. The expansion of higher education was also affected by the production development model based on import substitution, which kept the labour market depressed for innovative technicians and professionals. Traditional values predominated as far as the relative importance of professions

and determined the evolution of institutions of higher education (IHE) and their scant ties to production.

The supply of first degree leans towards the liberal professions even today. In addition, a long-protected market did not encourage research and technological development, and at the same time institutions of higher education received no incentive to forge strong ties with industry or services. The training of scientific and technological cadres still does not meet the country's needs.

The economic crisis of the eighties and the consequent reduction of State funds for public institutions created a starting point for a change in the quality of higher education, which was reinforced by the influence of other variables of a circumstantial nature. These included the adoption of an export-based development model, globalisation and regional integration, mainly through the North American Free Trade Agreement. Despite these events with potential to alter the situation, many institutions show reluctance and resistance to any change either in structure or function. There are also external limitations on the pace of this change, such as the 1995 economic crisis.

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THE MEXICAN EDUCATIONAL SYSTEM

HISTORY AND PHILOSOPHY OF EDUCATION

The Conquest changed the order of Mesoamerican civilisations. What is now Mexico was part of the Spanish empire, governed by a viceroy. Religious orders undertook an enormous task that was reflected not only in religion, language and culture but even in the layout of many of the towns and cities. A multi-ethnic society grew up, with marked inequalities between the different groups composing it: Indians, peninsular Spaniards, criollos born in New Spain, mestizos and black slaves. A sense of national identity emerged during the three centuries of the Colony, and a certain degree of cultural homogeneity derived from intermarriage and to a lesser extent education. This fusing of culture led to nationalism in New Spain under the leadership of the criollos.

The Colegio de Santa Cruz de Tlatelolco, founded in 1536, and the Royal University of Mexico, which began giving courses in 1553 to educate criollos and Europeans were the principal institutions of education in New Spain. The university gained fame in Europe as the foremost educational establishment in America. Its prestige as a seat of learning and a centre for producing distinguished intellectuals, especially clergymen and lawyers, was confirmed over almost two hundred years. The late eighteenth century saw the foundation of the Royal Mining Seminary and the San Carlos Royal Academy of Arts, which lasted and had later repercussions, particularly the former institution.

The period immediately following Independence, 1821 to 1860, was marked by the struggle between federalist Liberals and centralist Conservatives. The first group wanted a federal, democratic, representative republic, the division of powers and a secular society. The second wished to maintain ties with Spain and respect the concordat with the Vatican; their aim was a constitutional monarchy and they supported the two attempts to found an empire in Mexico, Agustín de Iturbide's from 1822 to 1823 and Maximilian of Habsburg's from 1862-1867. These conflicts made public administration, including education, difficult.

Liberal governments closed the Pontifical University in 1833, promoted education for the people, created the first Lancaster schools and founded the first institutions to train teachers. Not without heated debate with the Conservative Party, they

introduced the principle of secular education into the 1857 Constitution. Church and State were separated, freedom of education was decreed, and the concordat with the Vatican revoked.

The Reform laws and the Liberal Constitution of 1857 led to a civil war, which the Liberals won. After the defeat of the French, the Conservatives and the empire of Maximilian in 1867, President Benito Juárez and the Liberals restored the Republic. In 1867 the government founded the National Preparatory School and positivism was established as the official educational philosophy. Although many of them had a background dating to Colonial times, vocational schools and the first teacher training schools were built up during these years, and a start was made to spread elementary education, particularly in state capitals and a few other cities. These efforts were not enough, since large sectors of the population were still unable to benefit from education. At the turn of the century the indigenous population was virtually segregated and the overall illiteracy rate was 84 per cent.

At the beginning of this century Justo Sierra channelled the ambitions of Liberal teachers by promoting the expansion of public education throughout the country. The central government created the Secretariat of Public Instruction and Fine Arts. An inspection of teaching establishments begun in 1906 ended in the creation of the National University of Mexico in 1910.

After the Revolution the winning faction convoked a Constitutional Congress. The 1917 Constitution enshrined ideas of social reform and individual guarantees and at the same time embodied the ideas of liberty and social justice put forward by the groups that headed the Mexican Revolution. Article 3 established that education should be secular, national and free of charge, and prohibited the intervention of religious organisations and ministers of any sect in primary education, which was compulsory.

The Secretariat of Public Education (SEP) was created in 1921. José Vasconcelos, its first head, became the leader of a crusade for education for the people. The tasks the SEP undertook included confronting the unequal distribution of education in the country, seeking to compensate for the financial weakness of states and municipalities. It was in the twenties that cultural missions were created and the system of rural schools was introduced. Both encouraged the social mobility of segments that had been excluded. In the same decade, illiteracy was brought down to 66 per cent. On the other hand, different formulas that were tried to combat the marginalisation of indigenous localities ended in failure.

During the thirties technical education was supported to reinforce industrialisation and social mobility, and the National Polytechnic Institute was founded in 1936. In 1934 the Constitution was amended to define the socialist nature of education, a doctrinaire order that was later annulled to be replaced by the concept of education for national unity and international solidarity. The National Plan for

Improving and Expanding Primary Schools, better known as the Eleven year Plan, was set in motion in 1958. This had effects on the system: coverage was widened, hundreds of thousands of schools were built, and the production and distribution of free textbooks was begun in 1959. The literacy campaign has been continuous ever since World War II ended.

THE PHILOSOPHY OF CONTEMPORARY EDUCATIONAL POLICIES

Article 3 of the Constitution establishes that education in Mexico shall be designed to develop harmoniously all the faculties of human beings, fostering a love of the homeland, awareness of international solidarity, in independence and justice. Based on these general philosophical principles, education aims to produce critically-minded, thoughtful, patriotic citizens capable of changing their present circumstances and furthering social and economic development.

The 1993 General Law on Education defines education as a constructive, continuous process that contributes toward the development of the individual and the transformation of society, with emphasis on instilling a sense of social solidarity. In addition, it endorses the principles of social justice and equity, stipulates the State's obligation to provide educational services so that the entire population has access to basic education, which is essential for acquiring, transmitting and advancing culture, and which shall be secular and free of charge; to strengthen awareness of nationality and sovereignty, instill the understanding and practice of democracy; to foster attitudes that encourage scientific and technological research and innovation; promote artistic creativity and the spread of national and international cultural values; consciousness of the rational use of natural resources and the protection of the environment. It also establishes the State's duty to promote and give attention to higher education, support scientific and technological research, and encourage the strengthening and spreading of culture. The Constitution and the Law state that basic education consists of six years of primary, and three of secondary. Primary and secondary schools are compulsory. Mid-level education consists of upper secondary schools and various types of job training. Higher education is provided by universities, technological institutes and other institutions.

Ever since it was created the SEP has had the authority to offset the financial and organic weakness of states and municipalities. The country witnessed the Secretariat's nationwide action. Centralisation was modified drastically by the 1992 Agreement on Educational Modernisation. Under this agreement, basic education and teacher training that were formerly managed by the Federal Government were transferred to the states. This decentralisation is a new step toward strengthening federalism in Mexico.

The Agreement for the Modernisation of Basic Education describes how the "federalisation" (the transfer of certain responsibilities for education to state and

local governments) of pre-school, primary, secondary and teacher training institutions works. It maintains that education must be seen as a pillar of the country's comprehensive development and that the modernisation of basic education means a new relationship between the State and society, which entails its participation in the field of education. Teachers, parents, local governments, schools and the community all have their role to play in this task.

The National Development Plan 1995-2000 states the need to make sure that during this period education is a firm support for national development, and for this reason makes it "(...) a very high and constant priority of the Government of the Republic both in its programmes and in public spending". It points out the need to consolidate the efforts made to extend coverage and to strengthen actions aimed at raising quality. For this it proposes a permanent drive for education, founded on a nationwide alliance between both the Federal, state and local governments and teachers, parents, private educational institutions and society as a whole.

LAWS AND REGULATIONS

Article 3 of the Constitution is dedicated to national education. It upholds the power of federal, state and local governments to provide education, summarises the purposes of education and describes its social character.

The General Law on Education governs all education provided by federal, state and local governments, their decentralised agencies, and private organisations; it also establishes the nature, aims, means and operating conditions of education. Congress issues laws designed to distribute educational operations, and it is the responsibility of the Secretariat of Public Education (SEP) to evaluate the national system.

Other laws that establish the basic legal framework of education in Mexico are the Planning Law, the Law on Coordinating Higher Education, the Law of Professions, and the provisions pertinent to education contained in the Organic Law of Federal Public Administration and in the different organic laws that govern the activities of state governments, and finally, in the sphere of federal government, the by-laws of the Secretariat of Public Education. Public universities are governed by their organic laws.

STRUCTURE AND FUNCTIONS OF THE SYSTEM

Mexico's education system is complex, disparate and varied. It is made up of educational levels and modes where students, teachers and researchers instruct, investigate and make themselves responsible for spreading culture. Its salient feature in the nineties is the creation of a decentralised system.

Educational levels

Mexico is younger than the other Member countries of the OECD. In 1990, 63 per cent of the total population was aged between 2 and 29. This was higher than Turkey's 1989 figure of 59 per cent. The figure for Mexico differs greatly from the OECD average (47 per cent) and even more from that of Sweden (36 per cent). This means that Mexico faces a proportionately higher demand for education.

The national figure for school attendance was 29 per cent in 1994 (the total student body numbers 25 794 578 out of a population of 89.6 million). This figure rises to 33 per cent if the population in open learning systems (approximately four million) is taken into account. In addition, the national rate of demand satisfaction (total enrolments in formal education as a proportion of the population aged from 4 to 24) has been slightly over 60 per cent since 1980. These figures indicate the effort made by the State and society.

An analysis by levels of how the educational system is structured demonstrates two things which affect the economy. The first is the low enrolment in job training and higher technical education, which together amount to barely 3 per cent. The second is the low enrolment in postgraduate studies as compared to that in first degree courses.

BASIC EDUCATION

Basic education covers nursery, pre-school, primary and lower secondary schooling. Compulsory basic education lasts for nine years: six of primary and three of secondary.

Pre-school education is the stage immediately before primary school and is open to children aged four and five. There are three possibilities: ordinary kindergartens, which cater for the infant population of densely inhabited urban and rural areas and are the ones with the highest enrolment figures. These are provided on a federal, state and private basis. Community kindergartens cater for small and scattered rural populations, while indigenous pre-school is provided for five-year-olds belonging to different ethnic groups in their own language.

Primary education is compulsory and free of charge when it is provided by the State. It is for children aged between 6 and 14, and is provided for 14 469 450 pupils in the following forms: general (95 per cent of enrolment); bilingual bicultural primary for the indigenous community (659 998 pupils enrolled), whose primary school curriculums are adapted to meet regional needs and the schools depend on state governments; community courses designed for isolated rural communities, in which all the schools are "unitary" (a single teacher for several groups) reach 94 206 pupils; and finally special programmes such as special education and specific curriculums for indigenous and rural populations. The main organisations

involved in indigenous and rural education are the National Council for Educational Development (CONAFE), the National Indigenous Institute (INI) and the National Institute for Adult Education (INEA).

Lower secondary education lasts for three years and is provided for pupils aged 12 to 16 who have finished their primary education. It includes some 4 342 000 pupils under the following categories: general secondary with the majority of enrolments; technical secondary, which gives general pre-highschool instruction and school-leaving standard education at the same time and also issues certificates of ability in four areas (industry, agriculture, fishing and forestry). This branch accounted for 27 per cent of enrolments in 1994 and 22 per cent ten years previously. Secondary School for Workers, with special timetables is sometimes given in the actual place of work and provides education for some 85 000 workers that account for 1.96 per cent of enrolment at this level. Telesecundaria, created to give opportunities to the people of small isolated communities, served 13 per cent of total enrolments in 1994.

The 1992 reform in basic education

Under the 1992 Agreement for the Modernisation of Basic Education, responsibility for managing and operating primary, secondary and teacher training schools, formerly controlled by the federal government, was transferred to states, except for those in the Federal District. The federal government is still in charge of regulations on course content, study programmes and curriculums, compulsory and optional subjects, regional variations, the length of the school year, obligatory civic ceremonies and general conditions for the recruitment and promotion of teaching staff. In addition, CONAFE funds and manages compensatory programmes for poor areas and underprivileged groups.

The SEP designs, publishes and distributes more than 110 million textbooks to the country's primary schools every year, in addition to teaching aids. It also approves a list of compulsory textbooks for secondary education, but the use of additional textbooks is left to the discretion of individual schools. A revision of the curriculum for basic education was begun in 1992 that includes new study plans and programmes and also textbooks. The main objectives are to boost the study of reading, writing and mathematics. The 1992 reform changed the basic organisation of curriculums from areas of study to specific subjects.

The General Law on Education gives importance to community participation in the development of primary education. It sees society's participation as an ongoing, organised, dynamic process; it points out the need to set up councils in every public school, municipality and state in the country. These councils may consist of parents, teachers and other interested parties, including teacher training institutions and education authorities. Organisation is still in the initial stage.

School organisation

The most common pattern in urban primary schools includes a principal and one teacher for each grade. In the Federal District, school administration also usually has the help of a teacher who acts as secretary. Schools in rural areas often have teachers who are responsible for more than one grade. Extra-curricular activities have to take place at the same time as compulsory classes because many premises accommodate two school shifts.

The secondary school model differs in that there is a deputy principal as well as the principal. Both of these are helped by staff responsible for administration, since it is more complex than in primary schools; there is a teacher for each subject in the three grades of the cycle, and the pattern of instruction is the same as in upper secondary and higher education. This pattern was modified for the television secondary system.

The schools are grouped into zones, which are the basic aggregate units for administrative purposes. A team of supervisors delegated for each school zone helps in school management and the administration of teaching services and acts as liaison between schools and central authorities in matters such as adherence to curriculums and school calendars and also gives advisory assistance.

Efficiency, quality and meeting demand

Average schooling among the population aged 15 and over rose from 5.8 years in 1984 to 6.9 years in 1994. According to official figures, this average will reach seven years in 1995.

The dropout and failure rates in primary education were gradually brought down in the period 1985 to 1994. The dropout rate fell from almost 6 per cent in 1984 to 3.4 per cent in 1994, while the failure rate dropped from 9 per cent to 7.5 per cent. Therefore, the completive efficiency rate (the ratio of leavers from the last year of the course to the number of entrants), which was 50 per cent in 1984, rose by more than ten percentage points in ten years to stand at 61 per cent in 1994. The situation in secondary education is different. Although it was possible to bring down the dropout rate in the same period from 9 per cent to 7.5 per cent, the system did not manage to reduce the high failure rate, which is 27 per cent. The rate for primary schools is still one of the serious problems of education since it affects the rest of the system.

Another problem is the range of variation in the educational efficiency of different states. While Baja California, the Federal District, Nuevo León, Querétaro, Tamaulipas and Tlaxcala have rates of over 75 per cent, in Campeche, Guerrero, Oaxaca, Veracruz and Yucatán they are below 50 per cent. In Chiapas the figure falls to 28 per cent. Differences between states are less in secondary education. In

addition, there are differences in demand satisfaction. Some states meet demand 100 per cent, for example the Federal District, Chihuahua, Nuevo León and Sonora, and others satisfy less than 90 per cent of the demand such as Aguascalientes, Colima, Chiapas, Michoacán, Oaxaca, Puebla and San Luis Potosí.

There is a considerable degree of backwardness in education. The overall illiteracy rate is still almost 10 per cent. The number of Mexicans with incomplete primary or secondary studies is around 35 million. Educational backwardness is greater in rural areas and among the poorest social groups.

With a view to reducing this lag the Federal Government designed and implemented compensatory programmes for underprivileged regions and groups. The most important of these are the Programme Against Educational Backwardness (PARE), which began to operate in 1992. Through it, special funds (over 2 000 million new pesos) were earmarked for the states with the highest indices of educational backwardness *i.e.* Chiapas, Oaxaca, Hidalgo and Guerrero. PARE II has covered ten more states, and PAREB another 14. Compensatory funds are used for financial incentives to encourage teachers to remain in communities, material, infrastructure and improved supervision. Future adult education policies will tend to be based more and more on the particular needs of individuals and communities.

"Decent Schools" programmes were implemented through the Ministry of Social Development to repair and improve school premises and facilities in poor communities. The Children in Solidarity programme gives a grant equal to the minimum wage, and food baskets, to children from poor families with good grades. More than 1 160 000 pupils received scholarships in 1994.

Training teachers for basic education

In 1984, the demand for primary school teachers and to a lesser extent for secondary schools fell, and as a result registration in teacher training schools decreased. The National Agreement for the Modernisation of Basic Education transferred teachers' labour relations to the states. At the same time the Teacher's Degree was approved, with its three aims: to give teaching higher social prestige, increase teachers' incomes and raise their professional level.

Enrolment in teacher training schools has been on the rise since 1993, salaries are improving, although they have not reached 1982 levels.

Assessment in basic education

Primary education was modernised by the 1992 reforms; study plans and curriculums were modified and most free textbooks were changed; alterations were made to the content of basic instruction, which gives priority to reading, writing,

arithmetic, natural sciences, geography, history and civic studies. Information about student performance still depends on qualification by each teacher. Although certain aspects of evaluation have been strengthened – a system has been started for the advancement and promotion of teachers called Teaching Career – basic education lacks sufficient instruments for evaluating school work systematically.

The problems of secondary education are more complex and more difficult. For example, study programmes and curriculums are not broad enough in technology, sex instruction, physical and artistic education, communication and computer science and in their relevance to the world of work. In technical secondary schools there is confusion as to the hours allocated to technological subjects, however curriculums for technological training are in the process of being amended. This reform establishes national standards as regards the areas to be covered, their content and duration.

UPPER SECONDARY EDUCATION

Upper secondary education comprises senior high school and other levels equivalent to it as well as vocational education. The typical age group in upper secondary education is between 15 and 18. State schools serve 80 per cent of the student body, and private schools the remaining 20 per cent. This level lasts three years, although there are some schools that cover it in two.

The programmes available at this level can be grouped into three categories: *a)* general senior or pre-university level high school, whose main function is to contribute to the general development of pupils who intend to continue into higher education; *b)* technical vocational education at the upper secondary level provided by the Dirección General de Educación Tecnológica Industrial (DGETI) and the Colegio Nacional de Educación Profesional Técnica (CONALEP), which is for training skilled workers for the labour market; and c) "two-pronged" technological senior high school, which gives technical training and preparation for entry into higher technological education at the same time.

Preparation for entry into higher education is provided at the senior high school level in government-run and private universities, the Colegio de Bachilleres and private schools. These serve over 67 per cent of the student body at this level.

"Two-pronged" senior high schools provide courses in preparation for entry into technical first degree courses in biology, exact sciences and business management. At the same time they award the diploma of skilled technician, with which graduates can enter the labour market. A little over 20 per cent of students are enrolled in this area.

CONALEP, a decentralised government agency, and the DGETI play an important role in training skilled workers and in steering student enrolment towards the

areas mentioned above. This option for completing upper secondary education prepares skilled workers for the industrial and service sectors. At the moment, the system of Training Based on Work Skills Standards is being structured. The standards are being established by a body with representatives from the private sector and academic circles.

The structure of upper secondary education and its ties with universities

The complexity and variety in higher education are reflected in the wide range of institutions and the type of services they provide. One of the characteristic features of the system is the traditional link between upper secondary and higher education. There is a historical reason for this: the National Preparatory School was the basis for the creation of the National University of Mexico in 1910. Similarly, the autonomous state universities emerged from secular schools that provided upper secondary education, a first degree in law and one or two other courses. Vocational schools, which in their times were equivalent to today's senior high school, were incorporated into the National Polytechnic Institute when it was founded. Many private schools providing higher education created senior high-school courses and as a result higher and upper secondary education are closely linked.

The makeup of this level has changed since 1970, as have its ties with institutions of higher education. In this year under 11 per cent of students were enrolled in training courses for technicians but by 1994 this had risen to 17.3 per cent. The upper secondary section of public universities served almost 40 per cent of the students in this area, but only 17 per cent in 1994.

In the seventies some state universities such as the autonomous ones of Baja California and Chihuahua, separated their upper secondary education; other recent ones were created without, such as the autonomous universities of Chiapas, Baja California Sur, Ciudad Juárez, and in the Federal District the Autonomous Metropolitan University and the National Pedagogic University. The Under-Secretariat for Technological Education and Research (SEIT) separated technological institutions structurally from their upper secondary systems.

Despite this, senior high school education linked to public universities continues to be a large sub-system, operating in 269 schools dependent on 26 public universities. Eight of these have more students at the upper secondary level than in first degree courses.

Upper secondary education varies widely in its legal organisation, administrative control, financing and academic structure. There are some 300 different curriculums that in many cases are incompatible. This level began to grow in 1989 through decentralised institutions.

Actions of concertation and co-operation for upper secondary education

The SEP helped to create the National Coordination for Planning and Programming Upper Secondary Education (CONPPEMS) in 1979 and this was reactivated ten years later. Similar Commissions were established in each of the states to promote agreements on operations and functions among the different local educational institutions.

CONPPEMS concentrates on aligning and coordinating the interests of all actors at this level. Its aims are to improve the quality of services, satisfy the educational needs of different population strata and create a more efficient organisation of the educational system. Based on the above the National Commission for Upper Secondary Education (CONAEMS) was established in February 1993 as coordinator for this level. Similar bodies in each state are State Commissions for Upper Secondary Planning and Programming (CEPPEMS), created to promote co-operation agreements among different local institutions.

Institutions belonging to the CONAEMS are:

- Escuela Nacional Preparatoria – UNAM;
- Colegio de Ciencias y Humanidades – UNAM;
- Dirección General de Educación Tecnológica Agropecuaria, SEP;
- Dirección General de Educación Tecnología Industrial, SEP;
- Unidad de Educación en Ciencia y Tecnología del Mar, SEP;
- Consejo del Sistema Nacional de Educación Tecnológica, SEP;
- Colegio Nacional de Educación Profesional Técnica;
- Universidad Autónoma de Nuevo León;
- Instituto Politécnico Nacional (CECYT);
- Educación Media Superior de la Universidad de Guadalajara;
- Colegio de Bachilleres;
- Asociación Nacional de Universidades e Instituciones de Educación Superior (ANUIES);
- Federación de Instituciones Mexicanas Particulares de Educación Superior (FIMPES);
- Universidad Autónoma de Yucatán.

Quality of upper secondary education

There is a wide range of services and curriculum structure in upper secondary education. Two-year courses still exist alongside the three-year ones that are in the majority. There are courses that are specialised throughout the entire period and

others based on a common core with specialisation at the end; curriculums that are strictly preparation for higher education together with others that include elements of job training; academic and administrative structures based on year-long courses, and others with six-month courses. Some study plans cover the total number of class hours, while in others extra-mural tasks form part of the curriculum. Also, operating conditions are unequal among schools, since these depend on the resources available to each institution and the socio-economic status of the student population. This situation intensifies differences in the availability and quality of laboratories, workshops, equipment, premises, library and information services and other supports to teaching.

To these problems of quality are added the shortcomings brought from primary education. In some private schools, quality is achieved by frequent interim examinations and supervision of teacher performance. In other cases, the potential advantages of an institution having its own upper secondary courses are outweighed by the difficulties of ensuring quality. Most public universities have abandoned the traditional rule of granting "automatic entry" to first degree courses. However, amending the rule of automatic entry has often led to social pressures and political conflicts in public institutions.

The National Center for the Evaluation of Higher Education (CENEVAL) was established in 1993. This is a non-governmental organisation to evaluate levels of study, with standards and criteria that are applicable all over the country to students who enter upper secondary education, to those entering and graduating from first degree courses. CENEVAL is still in the pilot stage, and its tests are diagnostic only. The first tests of the National Examination for Entrance into Upper secondary Education were held in 1994. This system is a first step in gathering reliable information about the academic performance of different educational institutions at lower secondary, upper secondary and higher level.

HIGHER EDUCATION

In accordance with the General Law of Education, advanced instruction is given after upper secondary school or equivalent studies in universities, technological institutes and teacher training schools, and has three aspects: *a)* first degree, *b)* optional courses before graduating with a first degree, and *c)* postgraduate studies. The last category includes specialist studies, master's degree and doctorate. Four to six years are needed for a first degree; specialisations last one year except in the case of medicine; a master's degree takes two years after the first degree, and doctoral studies require two to three years after the master's degree, or four or five years after the first degree. However, this last step usually takes much longer to accomplish.

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The student enrolment rate in higher education in the national system was 4.8 per cent in 1991 and 5.1 per cent in 1994 for first degree, and 0.2 per cent for postgraduate studies. The transfer rate from propedeutic upper secondary into first degree courses shows an upward trend, rising from 61.3 per cent in 1991 to 67.1 per cent in 1994.

The enrolment rate in first degree and postgraduate studies in relation to the population of the 20-24 age group was 16 per cent in 1990. However, there are differences from state to state. For example, while the figure is above 30 per cent in the Federal District, it is under 10 per cent in eight of the country's states. The figure was below national average in 22 of the 31 states.

The private sector serves about 10 per cent of the student enrolment, and its participation in higher education is greater and increasing. It accounted for 16 per cent in 1980, 19 per cent in 1991, and 21 per cent in 1994. Private higher education is disparate. There is a quality group made up of certain universities that have modern facilities, properly qualified teachers who are relatively well paid, and expensive fees, catering for high income brackets. The intermediate segment strives to provide good services but does not have the prestige or the features of the first category; this group serves the middle classes. There is a third sector that has neither minimum quality nor suitable facilities. Many of these schools do not have libraries or full-time teachers; they cater for low-income groups, students rejected by other schools and blue collar workers.

The right to exercise a profession is dependent on obtaining an academic qualification from an institution of higher education and a professional certificate, which is given by both the federal government and state governments, without many additional requirements. A new law on this is being studied.

ADULT EDUCATION AND JOB TRAINING

Ever since the SEP was created in 1921 the Mexican government has run literacy programmes to bring adults into national development. The National Institute for Adult Education (INEA) was created in 1981 as the organisation responsible for steering and conducting federal literacy programmes and for coordinating with the states, the private sector and other social institutions. The literacy programmes coordinated by the INEA are carried out by volunteers, who are known as supportive co-workers (*colaboradores solidarios*). These include approximately 11 000 graduates of higher education who perform their community service in adult education.

Formal job training takes place in institutions within the educational system. The federal government provides basic training in Centers for Industrial Training (CECATIS) which lasts for one year after the completion of primary education. The National College for Professional Technical Education (CONALEP) trains young adults who have completed lower secondary education to be skilled workers. Two

institutions are active at the upper secondary level: the Dirección General de Educación Tecnológica Industrial (DGETI), in the Centros de Estudios Tecnológicos Industriales y de Servicios (CETIS); and the IPN at its Centros de Estudios Tecnológicos (CET). The private sector provides more than 60 per cent of these services. Training for employed workers is provided by specialised institutions through the co-operation of the public and private sectors. The Ministry of Labour and Social Welfare awards scholarships to the unemployed and to workers in strategic sectors. In 1995 the federal government created the Standardised System of Job Aptitude and of Education Based on Aptitude Standards to provide more and better training both at and for work.

FINANCING AND ADMINISTRATION

Except for slight reductions during the twenties and just after World War II, federal government spending increased steadily until 1982, when the crisis caused financing to be reduced for seven years. Although overall expenditure in 1994 was greater than in 1983 at constant prices, the system contained five million pupils more. State government spending on education is not uniform; some allocate more than half of their annual budget for it, while in other states, spending is only token. This is due to several factors: the relative degree of development, fiscal capacity, social pressures, local politics and cultural traditions. Private individuals contribute approximately 5.4 per cent, and the participation of municipalities is insignificant. The Government's commitment to education is demonstrated by expenditure, which in 1994 amounted to 6.2 per cent of GDP, as shown in Table 2.1.

Since it was created in 1921, the SEP has tended to centralise organisation and provision of educational services. At the beginning, this centralisation made it possible to widen coverage, increase the number of schools, encourage social mobility and bring thousands of disadvantaged communities into the mainstream of the country's development. However, as centralisation became rooted as a form of organisation it became an obstacle to educational development. Services, decisions, staff recruitment and curriculum design were all concentrated in the Federal District. In the mid-seventies the government began to question bureaucratisation, duplication of functions, slow decision-making and the obstacles the centralised system created for the development of education. At one point the SEP provided educational services directly for 65 per cent of the enrolled population; the rest were covered by states, private schools and autonomous institutions.

The process of decentralising education was begun. The SEP deconcentrated its administration between 1978 and 1982, creating 31 representative offices in the states to administer federal services at a local level. In 1983 these offices became Units for Educational Services to be Decentralised, and in 1984 Coordinated Public Education Services in the States. The aim was to prepare the ground for the states

Table 2.1 **Total educational expenditure by source and as percentage of GDP**

In million pesos, constant 1980 prices

	Total	Public		Private	Percentage of total with respect to GDP
		Federal	State and Municipal		
1982	253 419	80.6	14.3	5.1	5.3
1983	165 101	82.1	13.3	4.6	3.8
1984	185 385	74.8	16.4	8.8	4.3
1985	181 448	77.4	14.9	7.7	4.1
1986	155 490	76.1	14.4	9.5	3.9
1987	154 012	78.6	11.9	9.6	3.7
1988	141 410	80.3	10.8	8.9	3.6
1989	165 467	77.0	14.6	8.4	3.9
1990	197 389	75.1	16.8	8.1	4.3
1991	220 050	79.4	15.4	5.2	4.7
1992	249 517	80.1	13.5	6.4	5.2
1993	282 963	84.8	11.9	5.8	5.9
1994	292 106	83.6	11.0	5.4	6.2

Source: SEP and Secretaría de Hacienda y Crédito Público.

to take on responsibility for basic education and teacher training. After the National Agreement for the Modernisation of Basic Education was signed between 31 state governors, the Secretary for Public Education and the leader of the National Union of Education Workers in May 1992, the federal government divested and then transferred to the states over 100 000 school buildings, more than 22 million vehicles, computers, school furniture, office equipment and other materials. Since 1992 the states have attracted more than 2 million children into pre-school education, over 9 million into primary schools, nearly 2 million into secondary, and over 75 000 students into teacher training, in addition to those already there. Also, more than 513 000 teachers and over 115 000 administrative staff were transferred, with seniority and union rights. With federalisation, the SEP has been able to concentrate on steering the educational system as a whole efficiently and continues to operate educational services in the Federal District.

This process of *federalisation* means that all three levels of government (federal, state and local), as well as decentralised organisations and individuals, take part in the national education system. Under this decentralised model the federal government regulates and assesses the system; the states, individuals, decentralised organisations and local governments manage and control it. A national evaluation system is yet to be created and society's participation in education to be given force.

ACHIEVEMENTS AND CHALLENGES IN THE EDUCATIONAL SYSTEM

Widened coverage and the reduction of illiteracy are outstanding achievements of the educational system, considering Mexico's geography, population distribution, its dynamics of growth and the scarcity of resources. These are successes that have encouraged social mobility and helped to increase the overall output of companies. Other examples of progress are the upward expansion and the diversification of the system, the creation of universities, technological institutes and research centres, as well as support for the development of science, technology, the humanities and the arts.

However, needs are even greater. The system faces the challenges of quality, equity and relevance. The key aim of the curriculum reforms begun in 1992 is to improve the quality of education. There is a new national curriculum and regional ones are being designed, new teaching materials and new free textbooks are available, a new programme of refresher training for teachers has just been introduced. But this is not enough, since the idea that education is exclusively for childhood and youth is bound to be superseded by the increasing importance of lifelong education. The Government of Mexico is determined to carry these reforms deeper and wider, especially in teacher training and updating.

The challenge represented by equity means that coverage must be widened and the opportunity to enrol in school, stay there and acquire knowledge must be given to all children and young adults. Despite the progress made in coverage, there is room for considerable improvement in literacy, dropout and repetition rates and in the number of children who never enter the system. These gaps are larger in underprivileged urban areas, and more noticeable in rural areas where most indigenous groups live. The programmes to redress educational backwardness and other compensatory programmes begun in 1992, as well as the programme of scholarships for children from poor families and the one for "Decent Schools" have positive effects on social equity. But more effort must be made. The National Development Plan states that improving equity will be one of the government's aims.

Relevance means that the education system, especially in its higher levels, has been out of touch with the needs of society, the economy and the country's development in general. The government proposes to allocate more funds to linking education with the world of work and the needs of society. In the area of technical education, the National Standardised System of Job Aptitudes will be promoted, with the co-operation of the private sector, and adjustments will be made to institutions that have a definite vocational slant. Upper secondary schools and institutions of higher education will be encouraged by means of incentives and other new instruments to strengthen ties with productive sectors and society.

The challenges of quality, equity and relevance acquire greater dimensions as Mexico takes its place in the global market. We are determined to face them, as will be seen in the chapters that follow.

3

HIGHER EDUCATION

HISTORICAL BACKGROUND OF HIGHER EDUCATION

Higher education first appeared in 1552 in Mexico City with the foundation of the Royal University of Mexico. This had Theology, Canon Law, Civil Law, Medicine and Arts faculties, with chairs of Rhetoric and Latin Grammar. As an institution able to interpret reality and legitimise order, the Royal University was the only one that awarded academic titles after examining the candidates who completed their studies either there or in other institutions.

When the Jesuits arrived they founded Schools of Higher Studies to educate young criollos and mestizos who showed ability for the advanced studies of the time: bachelor's degree and doctorate; the sons of wealthy families pursued their studies in Spain or some other European country. The Colonial institutions of this type that won recognition were the College of Santa Cruz de Tlatelolco, founded by the Franciscans in 1536, which was the only one to admit Indians and prepared them for higher studies; the College of San Nicolás created in 1552 in Michoacán; the College of Santa María de Todos los Santos (1573), the first teacher training institution in America; the Jesuit colleges of San Pedro y San Pablo, San Miguel, San Bernardo and San Gregorio. The Colegio del Espíritu Santo was created in 1578 in Puebla, the distant forerunner of what is today the Benemérita Universidad Autónoma de Puebla.

As a result of the royal letters patent of 1579 the colleges of San Pedro y San Pablo, San Miguel and San Bernardo merged into one under the name of San Ildefonso, which was the forerunner of the National Preparatory School. In late Colonial times the University of Guadalajara (1791), the first secular institution of higher education, the Royal Mining Seminary and the Royal College of Surgery were founded.

Two universities were founded in the years following Independence, Mérida in 1824 and Chiapas in 1826, but they were to become the favourite target for attacks from Liberals because of their antiquated methods, use of Latin and failure to experiment. The Pontefical University closure was in 1833, and due to this the federal government created the General Directorate of Public Education (DGES)

that formally inaugurated the high school system and regulated entry into higher education.

This legacy influenced both Liberals and Conservatives, who agreed on the need for a deep-reaching reform in higher education. The 1843 and 1845 plans grouped knowledge in accordance with this new rationale, separating technical studies from other professional ones. From this time until the end of the century, several teacher training schools were founded and science and arts institutes created that were the ancestors of today's public universities in many states.

In the mid-nineteenth century, the Liberal triumph favoured the imposition of positivism as the unifying principle of society, and this altered the concept of the social role of public education, which offered post-primary instruction designed to help progress and modernisation of the country. With the old scholastic university finally suppressed, the National Preparatory School was created in 1867 and the national schools of Iurisprudence, Engineering, Medicine and the School for Advanced Studies were consolidated. This last was founded in 1908 to promote humanistic disciplines as well as the training of teachers for the universities themselves.

The National University, formally opened in September 1910, was based on the merging of the vocational schools created in the latter third of the nineteenth century. Two months after it opened, the Mexican Revolution broke out, and during the armed struggle academic activity was irregular and it only survived with difficulty. After the Constitution was promulgated, the National University went through a period of growth and consolidation that began in the time when Vasconcelos was rector. However, the political situation was not stable; the university became involved in the conflicts of the period, and some of the teachers and students were opposed to the control that the government had over it.

The government granted the National University autonomy in 1929, and in 1934 withdrew the subsidy in exchange for a one-off input of capital that from any point of view would be insufficient. The antagonism between the government and the National University continued until 1945, when the Organic Law was passed that is still in force today.

The end of the Revolution meant that some institutions were able to become state universities. The first to appear were the University of Michoacán in 1917, Sinaloa in 1918. These were followed by Yucatán in 1922, San Luis Potosí in 1923, Guadalajara in 1924, Nuevo León in 1932, Puebla in 1937 and Sonora in 1942. The remaining states founded their own universities over the following decades.

In 1924 the Ministry of Public Education divided preparatory school into two levels: secondary and upper secondary. The 1934-1940 Six-Year Plan announced the intention to found, strengthen and expand technical schools and promote scientific research, considering it to be "an activity fundamentally necessary for the progress

of the country", in answer to the industrialisation plans proposed by the revolutionary governments. The government also created the National Council for Higher Education and Scientific Research in 1935, which acted as an advisory organ for the organisation of scientific research institutes and for regulating activities in institutions of higher education. This Council was the basis for the National Polytechnic Institute (IPN), created in 1936. The IPN made it possible to extend educational opportunities to social groups that had had no access to higher education until this time and so played an important role in social mobility and in training the engineers needed as a result of the country's industrialisation.

The debate about university autonomy and the social role of institutions of higher education led to serious clashes between universities and the government during the thirties. The most important were those in Jalisco, Nuevo León, Puebla, Coahuila and San Luis Potosí, but this also meant alliances with other universities with a record of socialism, such as those of Yucatán and Michoacán. In the case of Jalisco, the imposition of socialist education in the University of Guadalajara caused the opponents of it, together with a group of entrepreneurs, to found the Autonomous University of Guadalajara in 1936. The government created the Teacher Training School for Physical Education, the Chapingo National School of Agriculture and other popular institutions. Other private institutions were established in the forties such as the Monterrey Institute for Technology and Advanced Studies and the Autonomous Technological Institute of Mexico designed to train professionals and promote the development of the private sector.

Population growth in the fifties and sixties came at the same time as social and political tensions of a Mexico that was seeing the stabilising growth model adopted in the forties run out of momentum. Student movements in the sixties were part of a world-wide demonstration of the tensions and contradictions that led to a change in the principles on which the social structure of the fifties had been based. This resulted in the design of new bases for changes in the structure and aims of higher education in Mexico. Its main feature was an increased student body.

The effects of this increase were critical for many institutions, since it led to imbalances in the coverage provided by services, and inefficiency in administrative and financial organisation and steering. In first degree courses alone, not counting teacher training, nationwide enrolment rose by 102 per cent in the Federal District and 408 per cent in the rest of the country between 1970 and 1980. This among other things resulted in an almost generalised lowering of the academic quality of public institutions and was accompanied by a far higher dependence on funds from the federal government. Meanwhile, the number of private institutions rose from 61 in 1960 to 358 in 1993.

Changes took place in upper secondary and higher education during the seventies. IPN vocational schools were renamed Centers for Scientific and Technological

Studies, the UNAM diversified educational opportunities by establishing a new subsystem of pre-university and completive education parallel to the National Preparatory School – the College of Sciences and Humanities (CCH) – to cope with the increased demand for education at this level caused by the population explosion and the wider opportunities at the elementary level. In 1973 the federal government created the Colegio de Bachilleres as an upper secondary option not geared to university studies.

The government decided to diversify the opportunities for vocational studies, particularly in the Federal District, by founding the Metropolitan Autonomous University which, with its three campuses, adopted the model of functional and administrative deconcentration and at the same time organised academic activity into divisions and departments. Meanwhile, the UNAM decided to create several National Schools for Professional Education (ENEP), based on a model that was different from both the traditional one prevailing in faculties and that based on departments. Private higher education grew and became stronger in this same decade. The Technological Institute of Monterrey (ITESM) began to open branches in several states of the country until they numbered 25, while new private universities gained prestige, for example the Anahuac, La Salle, the Autonomous Technological Institute of Mexico, the University of the Americas and the Iberoamerican University.

More and more technological institutes were founded in the late seventies and in the eighties. At the upper secondary level, the Centers for Technological and Service Studies (CETIS) with courses of a completive nature; Centers for Upper Secondary Education in Industry and Technology (CBETIS) – bivalent technological courses; Centers for Upper secondary Education in Agricultural Technology (CBETA) and Centers for Upper secondary Education in Forestry (CBTF) whose purpose is to train technicians to support the growth of national industry. At the advanced level there were Technological Institutes, Institutes of Agricultural Technology and of Marine Technology.

The economic crisis that began in 1982 reduced the government's financial capacity and consequently that of institutions of higher education. This crisis brought difficulties that were reflected in the quality of education, low salaries, little possibility of improving infrastructure, political conflicts, and others. One of the problems was the exodus of teachers and researchers to other countries or into the private sector. Recovery between 1990 and 1994 braked the drop in income and some salaries were raised by means of grants and incentives. Sources of public financing were also diversified. Although the 1995 crisis is affecting the country as a whole, the educational sector and public higher education are largely keeping to budgeted expenditure. The adjustment programme gives the opportunity to continue and make progress in the funding arrangements that were introduced in 1990.

STRUCTURE OF HIGHER EDUCATION

The higher education system

Educational institutions are placed in four categories for the purposes of this document and to give coherence to the historical series: *a)* universities, *b)* technological schools, *c)* teacher training schools, *d)* other institutions. There are both public and private institutions in each group. On the basis of the Programme for Educational Development 1995-2000 the category of technological university was added to the above classification.

The National University

The National Autonomous University of Mexico (UNAM) stands out for its historical importance, size, the services it provides and because it has been the model for the creation of other institutions. Although efforts have been made to create links between departments and functions, the situation continues where schools are mainly responsible for teaching, institutes for research and other departments for cultural activities. This model of academic organisation is the one that predominates in public universities, polytechnic institutes and private universities. Since the seventies, with the creation of new universities such as UAM and the autonomous universities of Aguascalientes, Chiapas, Ciudad Juárez and Baja California Sur, another model, based on departments and divisions, emerged.

From 1945 to 1966 the UNAM experienced a period of stability. Although it has seen various student and union movements since 1966, it has not ceased to develop and it is the largest educational institution in the country. Over 50 per cent of research in Mexico is conducted here; its teaching structure enables it to offer 67 first degree courses, over 80 specialities, more than 130 master's degree programmes and some 50 doctorates. The UNAM is also important for its cultural activities. It has over 2 000 continuous education programmes and a physical presence in 23 states.

The UNAM has 13 faculties and four national schools; nine of these provide open courses; it also includes branches of the National Preparatory School and the College of Science and Humanities which provide upper secondary education. More than 300 private institutions that offer upper secondary, first degree and postgraduate courses are affiliated to the UNAM. Over 130 000 students are enrolled in first degree courses in the National University, over 10 000 in postgraduate courses and around 120 000 in upper secondary education.

Enrolment growth in the UNAM is regulated. Its admissions policy, which dates from 1974, establishes that only 40 000 students are to be admitted to upper secondary education and 35 000 to first degree courses each year. This policy helps to keep the student population stable at approximately 270 000. Despite recurrent

social pressure to increase the number of places, the UNAM has kept to its policy of student selection.

Public universities

Ever since public universities were founded they have played an important role in local economic and political life, such as those of Guadalajara and Veracruz. The universities of Puebla, Nuevo León, Guanajuato, Sonora, San Luis Potosí, Baja California, Chihuahua and Yucatán deserve a mention for the efforts they have made in promoting research.

Due to the speed with which the university system was established and expanded, the creation of study courses responded to social demand. Half the student body is concentrated in the 10 most popular professions, and the fields of public accounting and law alone account for almost 25 per cent of students enrolled at first degree level nationwide. This skewed demand arises from numerous causes: effects of the labour market, family traditions, social prestige of the liberal professions, unsatisfactory vocational guidance services, lack of information about the labour market, the absence of any policies to encourage registration in priority areas, the greater availability of university teachers for these courses, and low costs and investment.

There are 39 public universities, of which 34 are autonomous; of these, one is national (UNAM), four are state institutions and another is the Universidad Pedagógica Nacional. These universities concentrate 60 per cent of first degree students, which is a figure similar to that for postgraduates. The complexity and disparity of higher education is demonstrated by the wide range in institutions and in the types of services they offer. One characteristic feature of the system is the link that higher education has traditionally had with upper secondary education. However, the composition of this level has altered, as has its relationship with institutions of higher education. In 1970, under 11 per cent of student enrolments were in complete training for skilled workers, and by 1994 this proportion had risen to 17 per cent. As far as the upper secondary sections of public universities are concerned, in 1970 they contained almost 40 per cent of the students at this level. By 1994 the figure was only 17 per cent.

Student registration at first degree level remained almost constant in public universities from 1988 to 1994 after periods of vigorous growth in the seventies. Efforts to achieve greater deconcentration of enrolments were successful and the student body in the Federal District fell from 53 per cent of the national total in 1970 to 23 per cent in 1992. As regards coverage of the age group, the rapid growth recorded between 1960 and 1980 which brought the rate up from 6 per cent to 14 per cent was braked by the weakening of the economy and its impact on

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government subsidies. The reduction of job opportunities was also a contributing factor.

The Autonomous Metropolitan University, founded over 20 years ago in 1974, has exerted considerable influence on the rest of the system from its different branches in Mexico City. Its organisation is based on a general rectorship and three academic units, which are run on departmental lines. Departments are organised into divisions: basic sciences and engineering, social sciences and humanities, design arts and sciences, and biological and health sciences. In turn, departments include study programmes and research areas. It offers 58 first degree and 30 post-graduate courses, catering to more than 43 000 students at the lower level and 590 at the other. From the start the UAM decided on a policy of keeping the student population in each of its branches to a maximum of 15 000.

The Universidad Pedagógica Nacional is a decentralised institution under the SEP that was founded in 1978 with the aim of providing educational services to professionals in-service teachers. It consists of the Unidad Ajusco, six other branches in the Federal District, and 68 in different states that the Federal Government transferred to them under the *Agreement*. The UPN offers various first-degree level remedial courses for teachers who do not have this qualification: the degree in basic education, using the open learning system; the degree in pre-primary and primary education, with a mixed classroom and open system; and the degree in pre-primary and primary education for teachers working in an indigenous environment. There are also some master's programmes. The Unidad Ajusco provides courses in educational psychology, sociology of education and education management which basically cater to the demand from upper secondary leavers who are interested in education.

A new type of public educational institution was introduced in 1991: technological universities. These require students to cover a two-year programme after upper secondary education to graduate as higher technicians. These institutions operate along lines similar to those of the French model of University Technological Institute. In January 1996 there were nine technological universities and the government intends to create more in the next few years and boost the growth of enrolment in them.

Public technological institutes

In 1936 the Federal Government planned a new institution of higher education that would issue diplomas for specialised professionals and provide shorter degree courses that were essential for industrial development. The National Polytechnic Institute (IPN) was founded on the basis of the technical schools already in existence, the prevocational and vocational technical preparatory schools and others in the technical system. What is today the subsystem of technological education

began to grow in 1948. The IPN made it possible to extend educational opportunities to new population groups. Research within this subsystem was strengthened by the creation of the Center for Research and Advanced Studies in 1961 and later the National Institute of Optical Astrophysics and Electronics and the Regional Centers for Technological Research associated with the technological institutes.

Technological institutes depend on the Secretariat of Public Education, through the Under-Secretariat for Technological Education and Research. It is a centralised system insofar as decision-making, but it has facilities and school premises scattered all over the country. They are coordinated at the national level by four bodies. Three belong to the Under-Secretariat for Technological Education and Research (SEIT) of the SEP: the General Directorate of Agricultural Technological Education (DGETA), the General Directorate of Technological Institutes (DGIT), and the Unit for Marine Science and Technology (UECyTM). The other unit, the IPN, is a deconcentrated agency: it has considerable autonomy in all academic matters, but the Secretary of Public Education appoints its director, and the SEP, IPN academics and authorities participate in the collegiate governing bodies.

With the exception of the IPN, which has been the model for technological education in Mexico ever since it was created, the 110 technological institutes are located in small and medium sized towns in the various states. In 1993 they covered 16.4 per cent of the students registered in first degree courses. They are notable for covering 36 per cent of education in engineering and technology nationwide, 18 per cent of agricultural sciences and only 9.5 per cent of social and administrative sciences. Postgraduate courses are given in their postgraduate centres.

The public technological institutes recently updated and streamlined their professional courses in order to make their educational opportunities more relevant. Consequently, in 1994 the number of courses available in the system was reduced from 55 to 19 at first degree level, and postgraduate programmes from 43 to 27. Areas of specialisation were also examined in order to create centres of excellence within disciplines. The academic reform of the technological institutes reflected the decision to produce graduates who, though specialised, possess knowledge and skills based on a solid core education that will enable them to move more easily within a wide labour spectrum. The services provided by this subsystem are classroom based, with only a small proportion offered in open options.

Teacher training schools

Teacher training is included in higher education as a whole because it requires an upper secondary education and the final qualification it provides has been classed as a first degree since 1984. However, teacher training has its own identity insofar as curriculum, organisation and ideology

The training of teachers for basic education in teacher training schools goes back over 100 years. The first Lancaster school to train teachers was founded in Mexico City in 1823, and two years later the "School of the Constitution" was established, dependent on the city council of Zacatecas. Teacher training schools as institutions separate from schools providing other levels of education, with their own characteristic features, emerged with the creation of the Mexico City Teacher Training School in 1887. This became the National Teachers School in 1924 and in the same year, the curriculums of urban and rural teacher training schools were standardised.

The Federal Institute for Teacher Training was founded in 1944 to solve the problem of teachers with no professional training. The Teacher Refresher Training Centers arose from this Institute in 1945. Since 1984 teacher training has been equivalent to a first degree; until then the only courses at this level specifically designed for teachers were provided by the National Teaching University (UPN), established in 1978. Therefore, since then UPN statistics have been classified together with those of universities. During the eighties, enrolment in teacher training schools began to drop considerably. Many factors had an influence in this, including in particular increased coverage in primary education, a fall in the population growth rate and the lower pecuniary attractiveness of the teaching profession compared to other opportunities for graduates after the 1982 crisis.

The institutions belonging to this subsystem are not integrated with one another. The teacher training subsystem has four basic functions: first, the initial training of teachers for the pre-primary, primary and lower secondary levels, as well as for physical and special education. Second, providing refresher courses for in-service teachers designed to improve their professional performance. Third, remedial courses for teachers who do not hold a first degree, either because they left teacher training before it was established as a first degree course, because their studies are of a lower level (e.g. upper secondary school students authorised to work as teachers) or because they underwent short training for a specific purpose (e.g. teachers in indigenous education). Both public and private teacher training schools, Teacher Refresher Training Centers (CAM) and the National Teaching University (UPN) provide various postgraduate courses.

In the academic year 1993-1994 there were 325 teacher training schools serving 120 210 students with a total of 12 026 teachers. 75 per cent of students were in public institutions. Out of the total number of schools, 215 are public and 110 private. They offer first degree courses in pre-primary, primary and lower secondary education as well as in special education and physical education. The first degree in secondary and special education can be studied in ordinary courses or else in intensive summer courses. Ordinary courses last four years and intensive ones six. In 1992 these centres provided remedial courses for 3 198 teachers and refresher

training for 122 032 throughout the country. Teacher training continues to be dominated by a female student population (64 per cent).

In contrast to the university and technological subsystems, the professional importance of teacher training lies in a single field and its academic staff have different origins and education.

Private institutions of higher education

The increased complexity of the social fabric in the thirties led to the foundation of the first private universities since the Mexican Revolution. A characteristic of private institutions is that they have their own sources of financing and do not depend on government funds. They have the power to organise themselves as best they see fit, but federal and state authorities reserve the right to recognise their curriculums and study programmes in several ways: by presidential order, affiliation to public universities and official recognition of the validity of studies by the federation or a state.

Private institutions have multiplied recently, and 47 have been created over the last ten years. This growth, which equalled 538 per cent from 1960 to 1993-1994, has been unequal in terms of quality and size, as well as in coverage of the registered student body. Out of a total 247 private institutions in 1993 (49 universities and 198 educational centres of a different type but of advanced level), 143 (65 per cent) had fewer than 500 students. In 1994, private universities and institutes served 21.2 per cent of the total student body enrolled in first degree courses.

The most complete private universities have a range of first degree and post-graduate programmes. Some of them are recognised as autonomous by law. They successfully offer short courses known as diplomas. Research is still in its infancy except in institutions such as the Universidad Iberoamericana (UIA) and the ITESM. They also have outreach and cultural programmes. There are also training programmes for their teachers and degree courses for those on full-time contracts. Students in these institutions either come from high-income families or have performance scholarships. However, there are other institutions with few courses of study, poorly qualified teaching staff offering neither good working conditions nor proper facilities. Government control over private institutions is mainly the responsibility of the SEP, which exercises it by granting official recognition of studies and qualifications.

The SEP-CONACYT group

Two teaching and research institutions were created in 1939. One was the National Anthropology and History Institute, which brought together anthropological, linguistic and historical research, as well as guarding Mexico's cultural heritage.

The other was the House of Spain in Mexico, created to welcome Spanish intellectuals fleeing the civil war. Two years later this became the Colegio de México (COLMEX), dedicated to teaching and researching the humanities and social sciences. This institution established the full-time engagement of both teachers and students as an essential condition for academic excellence.

COLMEX is the model for a type of small institution specialising in one area of learning with clear policies on the recruitment of academic staff and student admission that has served as the model for the research centres of the SEP-CONACYT (National Council for Science and Technology). These 27 centres are dedicated to research and in some cases to specialised teaching at postgraduate level in one particular field of knowledge. They are established on different legal patterns, but they are all financed by the federal government. Some focus on industry, while others devote themselves to postgraduate studies and research into science, technology or the humanities.

Few in number, they were created to produce high-quality work and gather together top-ranking academic staff responsible for conducting pioneering research in their fields and training young researchers. They are grouped into three subsystems: natural and exact sciences, social sciences and humanities, and technology and services. There are wide opportunities for these centres to work together with state universities and other IHE in research and postgraduate studies, especially if the need to improve the quality of first degree courses is taken into account.

General remarks

There are other federal government agencies that run institutions or programmes of higher education. These include the Secretariats of Agriculture, Cattle and Rural Development, Defense, Navy, Finance and Public Credit, Health, Labour and the Attorney General's Office. These establishments receive approximately 1 per cent of total enrolment in higher education.

The main feature of higher education in Mexico is its wide diversity. However all the institutions within it have common aims: to raise the quality of education, make the supply of curriculums more flexible, persuade more students to enrol in areas that today are less in demand and to forge tighter links with economic and social development. All this means a process of modernisation.

4

PERFORMANCE AND TRENDS IN HIGHER EDUCATION

What follows is an analysis of the current situation and the trends in the system and its components. An examination of the number of institutions, student enrolment, teachers and administrative staff gives an understanding of the system's breadth. A survey of curriculums and cultural activities pinpoints their activities. A description of how establishments are tied to their setting shows up the need for a policy in this field. Lastly, a review of how new technologies and pattern are used illustrates the innovations in process and those that are still necessary.

GROWTH OF THE SYSTEM

From 1960 to 1993 the number of public universities grew from 24 to 39, technological institutes from 3 to 110 and private universities from 8 to 49 (Table 4.1). However, 65 per cent of all institutions of higher education have fewer than a thousand students, and 53 per cent of them do not even have 500.

The growth in the number of institutions was in response to greater demand. The National Plan for Improving and Expanding Primary Education of 1959, gave a boost to basic education: schools were built, coverage was extended, and tens of thousands of teachers were hired. This expansion had repercussions on secondary schools in 1965 and on higher education as of 1968, becoming stronger after 1970.

Table 4.1 **Institutions of higher education, 1993-94**

	Universities	Technological institutes	Teacher training colleges	Others	Total
Public	39	110	219	25	390
Private	49	–	111	198	358
Total	**88**	**110**	**326**	**223**	**748**

Source: ANUIES, *Anuario Estadístico 1994. Licenciatura en Universidades e Institutos Tecnológicos*, 1995.

Between 1964 and 1970, the federal government did not support higher education. Subsidies for state universities were practically frozen, there was no funding to expand the supply of educational services and there were no proposals for innovations.

The demand for more educational opportunities concentrated on the liberal professions, which already enjoyed social prestige. The government's strategy after 1970 was to open university doors to social pressure and create new institutions – technological institutes and teacher training colleges. There was little innovation, save important exceptions: the open learning system and the academic model of the UAM. Private education began to grow at the beginning of the sixties and its expansion has been continuous. Encouragement for postgraduate studies began in the seventies in the UNAM, CINVESTAV, COLMEX and other institutions with the creation or consolidation of small, specialised institutions, concentrating on research and training researchers. The consolidation of postgraduate studies is still a target to be met.

ENROLMENT

Enrolment is concentrated in first degree courses, since during 1993-94 only about 4 per cent of students were registered in postgraduate studies, and only one out of every twenty graduate students is enrolled in a doctorate programme (Table 4.2). Since 1980 the system has shown a tendency to slow its growth in comparison with the boom in enrolment recorded between 1960 and 1980.

The change in women's social role in Mexico has had an influence on the higher education system. The increase in female enrolment for first degree courses between 1970 and 1993 was 256 per cent, while that of male enrolment was 61 per cent. Between 1990 and 1994, the growth rate of male enrolment was 1.9 per cent, compared to 21 for female enrolment; as a result, in 1993, women accounted for 44 per cent of all students in first degree courses. Most female students are enrolled

Table 4.2. **Enrolment in higher education by sub-system, 1993-94**

	First degree	%	Postgraduate studies	%
Universities	896 845	68.8	41 080	74.8
Technological institutes	213 308	16.3	4 542	8.3
Teacher training colleges	120 996	9.3	1 449	2.6
Others	72 998	5.6	7 829	14.3
Total	**1 304 147**	**100**	**54 910**	**100**

Source: Coordinación General de Información, DGES-SEP, 1995.

Table 4.3 **Enrolment in higher education by gender and type of institution**[1]

	1980			1990		
	Men %	Women %	Total	Men %	Women %	Total
Public universities	70.26	29.74	387 584	54.61	45.39	587 492
Private universities	60.93	38.93	65 368	51.83	48.17	246 505
IPN and technological institutes	81.38	18.66	93 594	65.63	34.33	203 915
Total	**71.05**	**28.95**	**546 546**	**56.11**	**43.88**	**1 037 910**

1. Does not include Teacher Training Colleges.
Source: ANUIES, *Anuario Estadístico: Licenciatura en Universidades e Institutos Tecnológicos*, 1981 and 1991.

in traditional courses related to liberal professions, followed by education and the humanities and, to a lesser extent, engineering and technology. In 1993, there were more females than males enrolled in accounting (53 per cent) and business administration (51 per cent) (Table 4.3).

Coverage and distribution of higher education

The accelerated growth of the major cities led to the concentration of demand in a few states and institutions. Since 1970, policies have been designed and implemented to increase more decentralised supply of study programmes and opportunities. Nevertheless, the Federal District, Nuevo León, the State of Mexico and Jalisco, with 38 per cent of the nation's population, account for 46.8 per cent of enrolments in first degree courses. The pattern of preferences has not changed either. In 1977, enrolments in technological institutes accounted for 15 per cent of the total student body at first degree level, and in 1993 it was still only 17 per cent. The distribution of enrolments in first degree courses by areas of study showed significant changes between 1980 and 1994, as shown in Table 4.4.

The fall from 3.13 per cent to 1.72 per cent in natural and exact sciences and the increase from 37 per cent to 45 per cent in social and administrative sciences show the deficiencies of school and vocational guidance. The disproportionate increase in education and humanities is due to the fact that teacher training became a first degree course in 1984. The drop in enrolments for agricultural sciences was due to specific discouragement policies in light of market saturation in this area, while stricter admission requirements affected registration in health sciences.

Table 4.4 **First degree enrolment by areas of study**

	1980	%	1994	%
Agricultural sciences	66 571	9.10	34 160	2.62
Health sciences	157 342	21.52	113 183	8.68
Natural and exact sciences	22 905	3.13	22 464	1.72
Social and administrative sciences	272 249	37.23	591 415	45.35
Education and Humanities[1]	19 991	2.73	157 004	12.04
Engineering and technology	192 233	26.29	385 921	29.59
Total	**731 291**	**100.00**	**1 304 147**	**100.0**

1. 1994 includes teacher training, which became a first degree course in 1984.
Source: ANUIES, *Anuario Estadístico: Licenciatura en Universidades e Institutos Tecnológicos de Educación Superior 1980 and 1994*.

Demand for admission and actual admissions

Most institutions of higher education have some sort of selection mechanism for aspiring students. Some public universities still maintain the system of automatic admission from high school to first degree courses. As a result of the wide range of instruments for measuring student performance and their unreliability the National Center for the Evaluation of Higher Education (CENEVAL) was created in 1993. This is an independent technical agency that arose within the National Coordinating Council for Higher Education (CONPES) following a proposal made by the General Assembly of the National Association of Universities and Higher Education Institutions (ANUIES). Its initial financing comes from public funds earmarked for the planning of higher education, but it will be self-sufficient within five years.

The results of studies conducted by CENEVAL in 1993 and 1994 indicate a generally low level of academic performance. In 299 000 examinations for admission to upper secondary schools taken by lower secondary school leavers with a minimum grade of 7/10 during the three years at this level, the national average for correctness was 41.6 per cent in 1994. The average was 40.7 per cent in 63 500 exams taken by students seeking admission to public or private universities in 1993.

There is no reliable data on the proportion of upper secondary school leavers who seek admission to first degree courses, since there are no instruments to discriminate between aspiring students or to show whether they have submitted applications and taken admission examinations in several different institutions.

Completive efficiency

The efficiency of the higher education system is calculated globally by establishing a correlation between admissions in one year and graduations from the institutions five years later, which is the average duration of first degree studies. The results obtained with graduating classes over the last seven years give an average efficiency rate of slightly over 54 per cent. This contrasts with the 1970s, when it was barely 45 per cent, and the latest period (1989-90 to 1993-94) when it was 49 per cent, with wide differences between fields of study.

Dropout rates

There are no global studies or agreements on indicators for deciding when a student should be considered to have dropped out, and there is no national data on which to base an estimate of dropout rate and the reasons for it. There are only some studies made by different institutions, mainly public universities, which point towards the following causes as probable: low average grades in upper secondary school, which would appear to foreshadow failure in higher education; marital status; and the need to divide time between studies and work.

Graduation

Several requirements must be met to obtain a degree: passing grades in all subjects; performance of social service; completion of a thesis or its equivalent; and success in professional examinations (upholding thesis). As in the case of completive efficiency, individual studies indicate that graduation rates vary between different courses and institutions. Past data show that in 1955, 37 per cent of students graduated, a proportion that had fallen to 9 per cent in 1975. At present the national graduation average for first degree courses varies between 25 per cent and 35 per cent of the cohorts that enrol. These fluctuations are due to a combination of social, organisational, and regulatory factors. The high percentage of university students who do not formally graduate because they fail to produce the thesis required of them has led some institutions to design alternatives such as dissertations, general examinations, other written works, and social service.

Social service

Since the thirties the most important community support programme in higher education has been social service by aspiring graduates. It involves working either free of charge or for token payment for a given number of hours – ranging from 300 to 800 – in companies and organisations, preferably ones belonging to the public sector. In order to increase its efficiency, social service has been linked to government schemes to improve care for underprivileged indigenous and

communities and urban dwellers, and currently involves some 850 000 students. At the institutional level it has become a part of outreach work. States are empowered to regulate it. The system does not always live up to expectations, since it is often a requirement that is only met in theory.

ACADEMIC STAFF

The growth in teaching staff numbers and the ways used to incorporate them responded to the needs and shortcomings of the educational system in the seventies. Policy then was to expand coverage to cope with the demand generated by upper secondary education. The number of academic staff in higher education quadrupled from 1970 to 1985, with notable differences from one subsystem to another.

During this period of unregulated expansion the system changed its relationship with society. The social composition of the student body was enriched thanks to wider opportunities. The number of teachers needed to meet this growth was increased by authorising new staff with little consideration of their academic level or teaching skills: pre-graduate students with 75 per cent credits were accepted. Working experience was sometimes required in only certain traditional courses such as law, medicine and engineering.

Taking in academic staff like this had different consequences: the quality of instruction was affected by serious weaknesses in the disciplinary and pedagogical skills of the new teachers. At the same time, professionalisation developed gradually at the trade union and corporate levels, with many aspects of academic life being subordinated to bilateral negotiations with the unions, such as the establishment of exclusivity clauses and different professional prerogatives for teachers such as admission, tenure, and promotion conditions. One result of these processes was a gradual change in social perceptions of academic activities, which went from being a job with a high level of social significance and recognition for its altruism to be a professional occupation not very different from any other.

According to ANUIES data, academic personnel in 1993-94 numbered 123 290 teachers at the first degree level, distributed unequally across the country. Seventy-five per cent of these (92 692) were employed at public institutions, and 25 per cent (30 598) in private schools. As for the time spent on academic activities, contracts on a per-subject basis outnumber those for entire courses by 65 per cent (27 per cent of contracts are full time and 8 per cent are part-time). Public institutions have a higher proportion of full-time and part-time teachers than private schools; in the former there are two career academics for every three course teachers, while the ratio in the latter group is one for every four. Public universities employ 58 per cent of all first degree teaching personnel and 54 per cent of all full-time and part-time academic staff (see also Tables 4.5 and 4.6).

Table 4.5 **First degree teaching personnel by contract time and sector, 1994**

	Public[1]	%	Private[2]	%	Total
Full-time	29 431	87.7	4 123	12.3	33 554
Part-time	7 591	76.9	2 276	23.1	9 867
Hourly	55 670	69.7	24 199	30.3	79 869
Total	**92 692**	**75.2**	**30 598**	**24.8**	**123 290**

1. 25 437 not included: level unsure.
2. 215 not included: level unsure.
Source: ANUIES: *Anuario Estadístico 1994: Licenciatura en Universidades e Institutos Tecnológicos*, 1995.

Table 4.6 **First degree teaching personnel by study level and sector, 1994**

	Public[1]	%	Private[2]	%	Total
Vocational	1 170	78.6	318	21.4	1 488
First degree	46 815	68.1	21 911	31.9	68 726
Specialization	6 200	79.0	1 656	21.0	7 856
Masters	11 058	66.4	5 576	33.6	16 634
Doctorate	2 112	69.6	922	30.4	3 034
Total	**67 355**		**30 383**		**97 738**

1. 25 437 not included: level unsure.
2. 215 not included: level unsure.
Source: ANUIES: *Anuario Estadístico 1994: Licenciatura en Universidades e Institutos Tecnológicos*, 1995.

At the graduate studies level, in 1994 the academic personnel totalled 10 053 teachers. Of these, 76 per cent are employed by public institutions and 24 per cent by private ones. Graduate-level academics show a level of professionalisation (in terms of contract types) that is slightly higher than that of first degree teachers. Full-time contracts account for 44 per cent, part-time contracts for 6 per cent, and course-based hirings for 50 per cent. The figures show a high concentration of academics in a few states: of all the teaching staff whose activities are concentrated on graduate studies, more than two thirds are located in the Federal District and in the states of Nuevo León, México, Jalisco, and Chihuahua. Other relatively sizeable groups of academics are found in the states of Puebla, Guanajuato, Coahuila, Baja California, and Veracruz. The remaining twenty states have a negligible involvement in graduate studies. This trend is even more marked at the doctorate level.

Of all first degree teachers in 1994, 1 per cent had studies at the vocational level, 56 per cent had a first degree, 6 per cent a specialisation, 13 per cent a

master's degree, and 2.5 per cent a doctorate. There is no information available for the other 20 per cent. This means that only 22 per cent of first degree academic staff have studies at a level higher than that which they teach. One notable phenomenon in teacher training institutions for basic education is the reduction in academic personnel over recent years, the result of a fall in student enrolment towards the end of the 1980s. In fact, the 20 000 staff at teacher training schools at the beginning of the 1980s had fallen by around 40 per cent by 1994.

The economic crisis of the eighties affected the budgets of higher education institutions and, as a result, the earnings of academic personnel. Between 1974 and 1990, the purchasing power of institutional budgets fell by more than 50 per cent in real terms at some of the major universities. This adjustment had serious effects, including the departure from the country of highly qualified scientists and academics and a search for additional employment by most teachers. This latter factor also led to a loss of prestige for academic careers and mounting difficulties to recruit young academics.

The growth in teaching staff numbers during the 1980s was most dynamic among private institutions (102 per cent), following in descending order by autonomous universities (48 per cent) and federal technological schools (33 per cent). During this decade, hiring of full- and part-time academics increased. In 1980, full-time contracts for first degree teaching personnel accounted for 17 per cent of all positions in the country (69 214); by 1994, their relative weight had reached 27 per cent of the total number of positions (123 240). In turn, the proportion of new hirings of career academics (both full and part-time) increased from 25 per cent in 1980 to 35 per cent in 1994.

At the graduate studies level, in 1980 career contracts (full and part-time) accounted for 58 per cent of the total (1 072); by 1994, they represented barely 50.3 per cent of the existing positions (10 053). This can be explained by the difficulties faced by the educational system during the crisis in retaining high level personnel in positions dedicated exclusively to academic activities.

Academic improvement programmes

In order for institutions to be able to retain more researchers and outstanding teachers, following a recommendation by the Academy of Scientific Research (AIC), the federal government created the National System of Researchers (SNI). This systems allows scholarships of between four and ten times the minimum wage to be given to the researchers who enter into it through a process of peer review. Entry and continued presence in the scheme, together with the amount of the scholarship, are awarded on the basis of productivity, measured in terms of publications, researcher training, and other academic activities. Despite opposition to the creation of the SNI from radical researchers and rectors, it is now a well-established

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institution and, in addition to the economic benefits it provides, membership in it is considered an honour.

Parallel to the growth in academic staff, the ANUIES and the federal government have launched teacher training and refresher programmes to counter the problem in academic quality. These programmes include courses for refreshing knowledge and supports for graduate studies.

Programmes were organised in 1972, 1978, 1986, 1989, and 1991. These are forerunners of the current National Programme for Upgrading Higher Education Academic Staff (SUPERA), which was agreed upon in April 1993 in order to increase the number of teachers with graduate studies in public higher education institutions. The teacher training subsystem has its own mechanisms for refreshing, standardising (for those without a first degree), and training academic personnel.

Other government agencies, such as the National Council for Science and Technology (CONACYT), channel special funds through their scholarship programmes into training and improving the nation's academic staff. Under these programmes, particular emphasis is placed on those engaged in research and graduate work.

The effects of programmes of this kind in each institution and the possibilities for their fruitful use depend, to a large extent, on the level of consolidation and development of the academic groups within each discipline and within the different institutional contexts. Such programmes tend to benefit institutions with a higher level of consolidation.

Staff training by study areas

In 1992, the distribution of academics by areas of study was determined by the distribution of student numbers: there were more in advanced professional courses and programmes for traditional professions.

The academic personnel in the natural and exact science areas and in the humanities and education have, proportionately, higher levels of schooling (master's degrees and doctorates) than those in other areas. The percentages of academic personnel with master's degrees and doctorates, taken as a proportion of the total staff in those areas, are 50 per cent in natural and exact sciences, 32 per cent in education and the humanities, 35 per cent in agricultural sciences, 21 per cent in social and administrative sciences, 18 per cent in engineering and technology, and 17 per cent in health sciences.

Recent policies affecting academic personnel

One of the main instruments in the strategy to modernise higher education was the introduction of systematic achievement assessments. Within the public

universities, the academic staff was considered the main target of this process. Within this same context, reforms were introduced into institutional regulations, particularly regarding the status of academic personnel. Criteria and procedures were established to evaluate teacher performance, as part of the creation of more a competitive academic environment and as an instrument to assist in the recovery of teachers' earnings. Similarly, funds were allocated for bonuses and incentives to reassess the social prestige of teachers and researchers and to emphasise their central importance in the country's modernisation.

The process to revalue the academic profession follows different paths in the areas of teaching and research. In the first instance, measures were established in 1990 to induce a qualitative differentiation of teachers (reducing their level of standardisation) and to launch systems to evaluate and stimulate their academic performance. Other measures were aimed at providing greater permanence of career teachers and constructing suitable institutional environments for developing the professionalisation of teaching personnel in accordance with the strictest academic criteria.

These policies translate into programmes with government investments, such as the Teaching Career Programme (PCD), which is operated by the federal government. These are governed by a set of general rules which are taken into account by the institutions' ruling bodies when they prepare their own regulatory instrument, while operation is the responsibility of each institution. In certain cases this meant that government authorities were unconscious of more efficient schemes, such as external evaluation, and this at first led to the appearance of criteria that varied from one institution to the next. With the experience gained over the last three years, common criteria have emerged and the importance of these programmes in sustaining any modernisation or improvement effort in educational quality can be seen more clearly.

ADMINISTRATIVE STAFF

Within state universities, which constitute the segment regarding which the most information is available, administrative staff numbers surpass those of career academics. At the start of 1994, those institutions had a total of 56 920 administrative employees, including low-level and executive staff, in comparison to 34 410 academics. The number of hours paid to administrative personnel was also 23 per cent greater than that paid to academic staff. Thus, the number of administrative hours available to students was on average 108, while the corresponding figure for academics was only 100. Such inconsistencies indicate the top-heavy administrative structure of these institutions. There are 165 administrative workers for every 100 academics.

The ratio of academic to administrative staff varies in each subsystem of higher education. In teacher training colleges, administration did not grow disproportionately in comparison with academics, and the total of the former is 35 per cent lower than that of the latter. In the technological subsystem, the situation is different at the first degree level, where the ratio is similar to that found in the teacher training colleges, and at the graduate level, where service personnel outnumber academic staff. These figures indicate that the administration of higher education can be expensive and low in quality, since staff are undertrained. Furthermore, the excessive specialisation of wage scales means that deficiencies in the services offered cannot be rectified.

The Under-Secretariat for Higher Education and Research (SESIC), through the Fund for Higher Education Modernisation (FOMES), has channelled considerable resources into projects for administrative modernisation, equipment, and academic infrastructure in public universities (except UNAM) and technological universities since 1992.

STUDY PLANS AND PROGRAMMES

In 1994, the higher education system offered slightly more than 300 first degrees and more than 1 000 graduate programmes (299 specialisation's, 582 master's programmes, and 126 doctorates). The structure of the supply was oriented to satisfy demand, thereby increasing the relative weight of instruction in the liberal professions in higher education. Ten of the more than 300 first degrees available account for almost 60 per cent of total enrolment, as can be seen in Table 4.7. Concentration is even higher if the fact that just three courses of study (accounting, law and business management) include over 33 per cent of the student body.

SESIC and the Council for the National System of Technological Education (COSNET) are promoting programmes for innovations in curriculums and education. In 1992 the SEP undertook the Academic Reform of Higher Education of technological institutes belonging to the DGETI, the DGETA and the UECyTM, under which the curriculum structures and study programmes of 55 courses were examined and reformed, bringing them down to 19. Among other things, this reform introduces interesting ideas such as generic courses that embrace several of the ones offered previously, avoids early specialisation, includes the periods students spend in the productive sector as part of the curriculum, provides a multidisciplinary training area in each course of study, strengthens the teaching of basic science and improves the balance between theory and practice. At the same time, the SEP has made relevant adjustments in the availability of courses in technological institutes, both in industrial and service sciences, and agricultural and marine sciences

Table 4.7 **The most heavily subscribed degree programmes**[1]

	New entrants 1994	Total enroll 1994	*Pasantes* 1993[2]	Titled graduates 1993[3]
1. Accounting	24 600	159 278	22 795	13 922
2. Law	25 424	122 013	15 101	9 579
3. Business administration	23 508	111 585	14 204	8 463
4. Medicine	11 059	56 946	7 241	5 858
5. Industrial engineering	10 731	54 993	5 948	3 487
6. Architecture	9 987	45 527	4 041	2 533
7. Civil engineering	7 418	35 069	3 270	2 667
8. Computing and systems	8 726	34 739	3 053	1 381
9. Electronic engineering	6 602	34 384	3 386	1 677
10. Psychology	5 709	28 516	4 485	2 331
Subtotal	*133 764*	*683 050*	*83 524*	*51 898*
Others	130 877	500 101	56 732	31 514
Total	**264 641**	**1 183 151**	**140 256**	**83 412**

1. Does not include teacher training schools.
2. A *Pasante* is a student who has gained the necessary credits, but has not completed an extra requirement (thesis) to graduate.
3. Titled graduates are those who have been awarded their final papers.

Source: ANUIES: *Anuario estadístico 1994: Licenciatura en Universidades e Institutos Tecnológicos*, 1994.

to tailor them to regional environments and the relevant national and global factors.

Some institutions have redesigned their first degree programmes. The UNAM for example introduced substantial modifications in several programmes, particularly in chemical engineering. In the IPN efforts are being made to systems for designing and developing curriculums. Ever since it was founded in 1974 the UAM has tried to develop new systems of education (in point of fact it was created in an attempt to make innovations to the academic and administrative tradition stemming from the UNAM), and has experimented with several curriculum design schemes. Also worth noting are the experiments that two institutions have been carrying out: the Benemérito Universidad de Puebla that is in the process of restructuring its administration and introducing an academic reform on the basis of credits; and the University of Guadalajara, which is moving from a centralised structure to one based on a network of relatively more independent institutions. In some cases curriculum reform is incomplete and the new approaches do not take full advantage of teachers.

Worthy of note among the work done by private institutions is that of the Iberoamerican University, the University of Mexico Valley, and the Monterrey Institute of Technology and Higher Studies (ITESM), which have partially, or in some instances, completely, restructured their study programmes and plans.

incorporating such concepts as open curricula, self-teaching, computer-assisted learning, and interactive study.

RESEARCH

The OECD reviewed the National Science and Technology Policies in Mexico in 1994, and therefore this section deals only with certain aspects of research in institutions of higher education.

Although organisations responsible for promoting research existed before, more attention has been paid to it since CONACYT was founded in 1970. The criteria it uses to evaluate and encourage research and postgraduate programmes, as well as those applied to scholarship candidates, stress the importance of quality and the observance of international standards.

The aims of the National Programme for Science and Technology Modernisation were to promote:

- Reallocation of functions among coordinating agencies to ensure more efficient team work.
- Diversification of financing sources, increased funding for research, and the creation of new national mechanisms to allocate funds.
- Strengthening of scientific and technological infrastructure, improvements in researchers' working conditions, and assessments of their productivity.
- Decentralisation.
- Feedback between teaching and research.
- Links between research and the productive sector.

Most scientific research in Mexico is done in national institutes dependent on the federal government and in public universities, particularly the UNAM. In fact, almost 95 per cent of the scientific articles published each year by Mexican researchers originate in public universities. The consolidation of research in certain of these institutions is the result of a cumulative process of human resource training which began in the sixties, gathered strength until 1982 and restarted eight years later. During the period of economic restrictions in the eighties the National System of Researchers was established to retain the most highly qualified staff of research institutions. The creation of wider and stronger ties between research and teaching in far more institutions of higher education is strategically important for educational quality and the country's future technological power.

Federal spending on science and technology

The national science and technology system comprises four sectors: government, higher education, industry, and non-profit organisations. Federal spending on

science and technology rose between 1990 and 1994 to 0.44 per cent of GDP. Planned federal spending for 1994 totalled 5 436.3 million new pesos, of which 27 per cent are administered by the CONACYT and the remaining 73 per cent by educational and research institutions and various government secretariats. Private sector involvement accounts for 22 per cent of total spending.

Researchers, institutions, and their lines of research

Although it had been growing for more than 20 years, by the late eighties research in Mexico was facing several problems: the numbers and quality of human resources, the chance of obtaining a degree abroad, the number of scholarships, infrastructure and support material, publishing the results of research, and access to foreign sources of documental information.

According to CONACYT figures, in 1991 (the latest data available) there were 22 479 scientists and engineers dedicated to research and development in Mexico. Of these, 48 per cent belonged to the public higher education subsystem and 1.6 per cent to the private subsystem. In addition, 17 976 technicians were engaged in research activities. Most research is carried out in public institutions. The Federal District contains 46 per cent of all research centres and institutions, while Nuevo León and Jalisco account for 7 per cent and 6 per cent, respectively. During 1991 there were 16 275 registered research projects, of which more than half were being carried out in public institutions, and 44 per cent of these were reported by institutions in the capital. As for the areas of interest, most projects dealt with social sciences and the humanities (26 per cent), followed by exact and natural sciences (21 per cent).

Research support programmes and agencies

The Academy of Scientific Research, founded in 1959, is a non-profit agency that brings researchers together to promote science in Mexico. Following its initiative, the federal government created the CONACYT in 1970 and the National System of Researchers (SNI) in 1984.

The Science Advisory Council was established in 1991, as a consultancy service made up of 57 researchers who have been awarded the National Prize for Science. It advises the President of the Republic on matters of science and technology.

CONACYT programmes for science and technology include the Programme to Support Science in Mexico (PACIME), human resource training, SNI, research and technology dissemination and financing for technological innovation, research and development.

PACIME, founded in 1992 and partially funded by a loan from the World Bank, supports scientific research projects, projects to improve scientific equipment and

infrastructure, the retention and repatriation of researchers, reimbursement of customs duties on imported equipment and university chairs of excellence.

Human resource training covers the programme of scholarships for postgraduate studies both in Mexico and abroad, and also provides support for domestic postgraduate programmes. In 1994, financial assistance was given to 9 240 scholarship holders in Mexico and to 3 080 abroad. The SNI was created to help the most highly qualified scientists with complementary grants based on production in their field, especially published work. At present it has 5 879 members, as opposed to the 6 233 in 1993. This drop is due to more stringent entry criteria.

Financing for research and development (R&D) and for technological innovation includes an R&D Fund for Technology Modernisation (FIDETEC) and a Fund for Reinforcing Scientific and Technological Ability (FORCCyTEC).

The Under-Secretariat for Higher Education and Scientific Research created FOMES to promote innovations and modernisation in institutions of higher education. FOMES has an influence on institutional research programmes. Its main activities cover refresher courses for researchers, training, scholarships, academic visits, and workshops for improving and refreshing knowledge. The National Academic Personnel Improvement Programme (SUPERA) offers scholarships for postgraduate studies to young teachers in public universities and technological colleges.

Postgraduate programmes

Scientific research is linked to graduate studies. In 1994, Mexico had 54 910 students in specialisation, master's, and doctorate programmes: 32.1 per cent, 62.3 per cent, and 5.6 per cent, respectively. The recent growth of the postgraduate area is due mainly to the expansion of the student body in specialisation's and master's degrees. The area of doctoral studies is still very small. Opportunities for men and women are more equal in master's degree courses than in doctorates, where the male student population grew.

Most student enrolment in specialisation's is in health sciences. Nevertheless, the relative weight of registrations in other areas has grown due to more programmes in social sciences, business administration and education.

Almost half the student body in master's degree courses, like in first degree courses, is concentrated in social and administrative sciences. 19.3 per cent in engineering and technology, 19.1 per cent in the humanities and 7.1 per cent in natural and exact sciences. Agriculture and health account for very small proportions. The areas that have grown in strength from 1984 to the present day are natural sciences, social sciences and business administration.

Distribution by area is much more uniform in doctoral studies: 29.9 per cent in social sciences, 26.4 per cent in natural and exact sciences, 17.1 per cent in education and the humanities, 13.5 per cent in engineering and technology and 3.8 per cent in agricultural science. Scientific disciplines are the ones that have shown most improvement in quality, probably due to teaching staff assessment programmes that demand higher qualifications than a first degree and to the national policies for science and technology implemented by the government.

If the criterion that the doctorate is the best means of training professors and researchers is accepted, figures show Mexico's limitations: there are 3 094 doctorate students in the country and 1 870 abroad. Only about 250 students graduate at this level per year. Since CONACYT was founded it has not supported medical specialities, which are covered by the health sector.

CULTURAL AND OUTREACH ACTIVITIES

Cultural dissemination and the extension of academic services are the third main function of higher education institutions. In 1993, 7.5 per cent of available resources were earmarked for this. At first, outreach services as one of the primary functions of universities were due to special circumstances, but their continuation and scope deserved to be mentioned because of institutions such as Bellas Artes and CONACULTA.

The publication of books and journals is a consolidated activity within cultural dissemination and academic extension. In order to support it and introduce better quality control by standardising the criteria for opinions, CONACYT created a register of journals of excellence. The circulation of published materials is unsatisfactory because there is no nationwide publishing policy and the distribution of material published by institutions of higher education is wanting. An Association of Higher Education Publishers was formed, and it was decided to register publications in a Nationwide System of Higher Education Information, managed by ANUIES.

Regional Cultural Corridors (CCR), introduced in 1986, have helped to serve a new public through events such as National University Arts and Science Fairs that are held all over the country, following the policy to decentralise culture.

Five state institutions have opened Houses of Science, while the IPN manages the Luis Enrique Erro Planetarium in Mexico City with educational activities for the public, and the UNAM opened *Universum*, the first interactive science museum. The IPN owns TV Channel 11 and there is a network of 20 university and technological institute broadcasting stations. ANUIES is planning a National Video Library to gather together the different videos and other materials produced by institutions of higher education. SESIC reserved a line in its university development programme of support for dissemination and extension to finance conferences, congresses, and publications.

At the beginning of 1994 outreach activities, which had not been considered a priority area of education policy, occupied as it were the eleventh line of action in FOMES. A few weeks later a Cultural Development and Diffusion Fund and the University Fund for Culture were created by several different universities to equalise the levels of outreach in different institutions and provide funds for cultural projects.

TIES WITH PRODUCTIVE SECTORS

One of the aims of the development plans for higher education is to tighten links with the productive sector. Although there are some institutions that have had ties with the private sector for some time, records of these relationships are not good.

To achieve this goal SESIC, through FOMES, has encouraged participation from the social and productive sectors. CONACYT, through the National Committee for Technological Modernisation (CONCERTEC), has implemented incubator programmes for firms based on technology, academic to corporate links, and research and development funds for technological modernisation in order to strengthen scientific and technological capacities, together with the register of technical consultants.

FEES AND FINANCE IN HIGHER EDUCATION

Enrolment and tuition fees vary in higher education, but they are generally low in relation to the actual cost of education. The reason is to be found in social pressure. In the private sector, fees are in line with supply and demand and the social commitment of each institution. In six private institutions the average annual cost is over 20 000 pesos.

For different reasons, many of them political, most public universities charge low fees and in some they are practically non-existent. At public universities and technological colleges there are various dues that are not obligatory. These include for example enrolment, reenrolment, contributions for laboratories, libraries, sports and others that are difficult to record in accounting. According to the 1994 Higher Education Statistical Agenda, certain estimates indicate that state institutions earn only 4 per cent of their budget from student fees. Among institutions in the Federal District the proportion is 1 per cent. The Autonomous University of Aguascalientes generates 26 per cent of its budget with its own income, 70 per cent of which come from dues and tuition fees. In the UNAM, only 7.3 per cent of are budget are covered by its own income, but not from fees. The UPN and the IPN depend on public funding to an even greater extent.

Programme for the modernisation of education

The 1989-1994 Programme for the Modernisation of Education encapsulated the federal government's education policy. The programme offered a critical diagnosis of the prevailing situation in Mexican education. It recognised progress made in democratising and expanding higher education; it also signalled its shortcomings in generating and transmitting knowledge, in the rigid structure of its curriculums, and in the imbalances in enrolment figures, and it criticised the universities for closing in on themselves.

In order to design a policy for public universities, the government accepted the commitments put forward by rectors in the PROIDES. In its strategic guidelines, the programme declares that the federal government will support the universities in their processes of decentralisation and regionalisation; it promises to simplify public administration procedures for higher education, to expand available resources, and to make better use of them.

After the federal government renegotiated the foreign debt, thereby obtaining more resources, spending on education increased. First, the wages of teachers in the basic and teacher training systems were increased; then investment; and finally the subsidies given to public universities and technological colleges. In 1989, before the instrument was even designed, the SEP, for the first time, used the financing policy to achieve certain goals of modernisation within public universities. At the end of 1989, the extraordinary resources were not channeled along the normal route of increasing the subsidies given to the universities. The SEP demanded modernisation projects from the institutions, to be financed with the extraordinary funds. These projects had to include assessable goals and offer results in the short term.

This was how the Fund for Higher Education Modernisation (FOMES) came into being. At the same time as it increases the resources given to the institutions, the Fund obliges them to make annual course evaluations, draw up their own strategic plans and formulate priority projects that are subjected to external audit and evaluation.

The regular subsidies paid by the federal and state governments to public universities continued their trend of increasing what is known as the irreducible. This item not only counterbalanced the undermining effects of inflation; there was also a constant increase, mainly in wages and salaries. FOMES and the funds earmarked for academic incentives accounted for nearly 10 per cent of federal contributions in 1994 (approximately 75 million dollars) and the tendency is still upward. The institutional incomes of universities earned from academic fees also increased, though to a lesser extent.

From 1988 to 1994 federal government financing rose by almost 80 per cent and that of state governments to public state universities by 50 per cent at constant prices, as can be seen from Table 4.8.

Table 4.8 **Financing for public state universities**

Millions of pesos at 1988 prices

	Normal Federal	Normal State	FOMES	Academic incentives	Total
1988	9 556	4 561	0	0	14 117
1989	9 824	4 671	0	0	14 495
1990	9 633	4 664	423	87	14 807
1991	10 618	5 142	1 012	160	16 932
1992	11 712	5 657	865	364	18 598
1993	12 933	6 616	1 082	713	21 344
1994	15 207	7 600	1 066	667	24 540

Source: Dirección General de Educación Superior, SEP, March 1995.

The FOMES and the academic incentives are policy instruments that the government uses to bring about change within public universities; their effects in terms of administrative and academic reforms have been felt in most of those institutions. These programmes are in the process of being modified in the light of experience and are now accepted by most institutions and academics. Their operations are evaluated each year.

HIGHER EDUCATION, EMPLOYMENT AND ECONOMIC DEVELOPMENT

The economically active population (EAP) in Mexico is 56 per cent of the group aged over 12. Only 8 per cent of the EAP study. In turn, 21 per cent of all the people over the age of 12 who study also work. The educational profile of the economically active population aged over 12 who do not continue studying shows that 56 per cent did not complete lower secondary school, 23 per cent completed lower secondary school and received sub-vocational level training, 8 per cent have concluded upper secondary and mid-level vocational studies, and 10 per cent advanced vocational studies of some kind. Most professionals can be found in the tertiary sector, followed by the secondary sector, which is the one that has made most effort to develop over the last forty years, and finally in the primary sector.

More than one third of professionals aged over 25 (36 per cent) earn less than three times the minimum wage, while another 25 per cent receive between three and five times the minimum. Another 36 per cent make more than five times the minimum, while only 8 per cent are paid the equivalent of ten minimum wages. In certain areas of work this trend is even more pronounced: 27 per cent of aeronautical engineers and more than 20 per cent of mechanical, extractive, chemical, metallurgical, and energy engineers earn more than ten times the minimum. Twenty per cent of business administrators fall into this range, together with variable

percentages (between 15 per cent and 20 per cent) of – in descending order – computer and systems engineers, economists, accountants, civil and construction engineers, architects, industrial designers, electronic engineers, and marketing graduates.

BUILDINGS AND EQUIPMENT

The construction boom ended in 1983, and since then the trend has been towards refurbishing existing facilities. Investment by the Federal School Construction Programme Administrative Committee (CAPFCE) in higher and postgraduate education fell in terms of per cent because efforts were directed essentially to other levels of the system, particularly the pre-primary area, where deficiencies were greater.

To mitigate the effects of lower financing after 1982, in 1990 FOMES began to provide extraordinary funds in aid of libraries, databases and computer equipment for public universities. In the sector of technological education, the National Technological Education System Council (COSNET), the Academic Activity Operations and Development Commission (COFAA) of the IPN, and CAPFCE have concentrated on building and repairing classrooms, laboratories and workshops.

Recent investigations show that in designing library policies it is necessary to consider in each case *a)* policies on the purchase of books and periodicals, *b)* the degree of correlation between posts and the academic background and training of library staff, *c)* the type of service provided, and *d)* the number of books per student in each institution. This ratio is at present 4.2, when that recommended by UNESCO for developing countries is 17.8. Building activity fell by more than one third between 1982 and 1984, and remained at this level until the early nineties. As general policies for the whole system the SES, SEP, ANUIES and CONACYT worked together to establish the National Library Network. They also helped universities to computerize their stock and provided support for the Regional Library Networks of Higher Education.

NEW TECHNOLOGIES: USE AND DEVELOPMENT IN MEXICO

In 1989 SESIC launched a series of projects to modernize electronic data processing in institutions of higher education. FOMES has supported these projects ever since they were initiated. Thus, the Teledata and Communications University Network (RUTyC), with headquarters in the University of Guanajuato was created in 1989. The project was consolidated in 1991. A SEP-UNAM trust was set up and funds were earmarked for changing the technology of links and for training courses for the technicians and institutional representatives of the RUTyC. This network ceased to exist in 1993 and was replaced by the National Academic Teledata and Computer Network, RANTEC.

For more than five years now, the IHE and research centers of Mexico have been taking steps to create a single domestic academic network with the aim of establishing a nationwide backbone called Internet Mexicana. The networks of academic institutions are:

UNAM Network. The integrated network of telecommunications services of the UNAM interconnects the institutes, centers and departments of this university in addition to sharing it with other public and private institutions. It has international ground link from Mexico City to Houston.

MexNet. This is a non-profit association of public and private institutions in which members undertake to share their infrastructure and links to form its network and uses the international link owned by ITESM from the city of Monterrey to Houston. This association is at present incorporated into the National Technological Network (RTN) operated by INFOTEC-CONACYT.

CONACYT Total Network. This network plan unites SEP-CONACYT research centers by means of satellite links. It has an international ground link between Mexico City and Fort Worth.

National Academic Teledata and Computer Network. In light of the new policies of openness and globalisation and the imminent signing of the North American Free Trade Agreement, SESIC created RANTEC. It is important to note here that financial resources for establishing most of the existing links have been supplied by the SEP through different channels.

CONACYT (RTN). The National Technological Network is a scheme that integrates the research centers coordinated by SEP-CONACYT by means of satellite and ground links, and has an international link to the United States.

The IPN (National Polytechnic Institute) installed a network in mid-1994 that covers its six centers outside the metropolitan area of Mexico City.

CO-OPERATIVE Network. This was originally a RUTyC project and has been developed by establishing links according to the needs and interests of member institutions.

The incorporation of Mexican institutions into advanced information handling technology has sown the seeds of modernisation in this field. The Government of Mexico has proposals and instruments to continue this process and eliminate obstacles and is ready to channel more resources into it.

5

GOVERNANCE AND STEERING

THE HETEROGENEITY OF THE SYSTEM

Heterogeneity is a most important factor in understanding the structures, governance and steering of educational institutions. This range is shown approximately by putting institutions into eight categories based on the size of the student body registered and the programmes offered for different levels.

1. *Large public institutions with 40 000 students or more*

   - High school. The course lasts for three years. This level contains between 20 per cent and almost half of the student body. The UAM is the exception since it does not provide studies at this level.
   - First degree. Specialized curriculums are followed (4-5 years). Contains over 90 per cent of remaining students.
   - Postgraduate. Covers over two thirds of the postgraduate students in the country. There are more opportunities in master's degrees and specialisations than at doctorate level.
   - Research. Mainly in research institutes and centers, although research is also done by full-time teachers, particularly at the UNAM. The exception is the UAM which is organized on a pattern of departments and carries out both activities in these units.

2. *Medium-sized or small public universities, with few or no students at the high school level accounting for under 15 per cent of total enrollment.*

   - First degree. Between 75 per cent and 100 per cent of students study at this level with a specialized curriculum (4-5 years). Few institutions are organized along departmental lines, the classic exception being the University of Aguascalientes. The postgraduate area is sometimes small but vigorous and, as a proportion of total enrollment, is similar to that of large institutions. Opportunities are more plentiful in master's degrees and specialisations. In other cases this area does not exist or is only just beginning.

3 *Medium-sized public universities with an upper secondary school enrollment that accounts for over 25 per cent of the total student body*

- High school. The core curriculum lasts three years. In some cases the level contains between 25 per cent and 60 per cent of university registrations.
- First degree. Given in vocational faculties with specialized curriculums (4-5 years). The postgraduate area is small or just starting up.

4 *Public technological institutes*

- First degree. This level contains over 97 per cent of total student enrollment, with a specialized curriculum (4-5 years) in the different branches of engineering and management. They have no high school area, except for the decentralized agencies of state governments.
- Postgraduate. Almost a third of all public technological institutes have postgraduate programmes, particularly at master's level, but it is small, accounting for only a little over 1 per cent of total enrollment.

5 *Private universities type I*

- High school. Some of them have their own high school area with a core curriculum lasting three years at the upper secondary level.
- First degree, research and postgraduate. Opportunities in at least for of the six branches of learning. Some have faculties and others have departments. Most students are enrolled in courses with specialized curriculums (4 years). Only the best institutions of this kind have research and postgraduate areas, especially for diplomas, master's degrees and specialisations, but very few doctorate possibilities.

6 *Private institutions of higher education type II*

- High school. Some incorporate this level.
- First degree. All or the majority of students are enrolled in a few courses that are in high demand and are low in cost (law, accounting, business administration). This category includes private teacher training colleges. Curriculums are specialized (4 years) and there is no research or doctorate area.

7 *Public teacher training colleges and UPN branches*

- First degree. More than 98 per cent of students are enrolled in this area. These are small or very small institutions specializing in one or more first

degree courses in education management, indigenous education, teaching methods, educational psychology and educational sociology.

- Postgraduate. Only nine public teacher training colleges and certain branches of the UPN offer postgraduate courses. Under 2 per cent of students are enrolled in this area. Research is in its very early stages.

8 *Centers of the SEP-CONACYT System*

- The largest one of them is the Colegio de México. Many of these centers specializing in advanced research are incorporated as non-profit organisations and some of them have postgraduate programmes. Funding is almost entirely from the government.

Academic structure

In the majority of cases, horizontal differentiation (the division of institutions into smaller organic units: schools, faculties, institutes, departments or divisions) is structured on the UNAM model. This is characterized by grouping the teachers of the same level in the same organic unit, with a marked emphasis on teaching. Research is concentrated mainly in institutes and centers in large institutions, since they usually do not exist in small ones. This is the organisation prevalent in all teacher training schools, almost all public universities, institutes and high schools and in most private institutions.

The other model of academic structure is the one based on departments. This groups the teachers of one discipline or related disciplines together in one organic unit, irrespective of the career programmes in which they teach. Also, at least in theory, research and outreach activities related to the discipline are carried out in the same unit as well as teaching. In medium-sized institutions this structure helped diversify educational opportunities because it does not require the creation of a new organic unit for each new programme, and highly specialized teachers can be hired even though there is no programme planned in their particular area.

This model was adopted by some private IHEs in the late sixties and early seventies (ITESM, UdeG, UIA) and shortly afterwards by two public universities (UAA and UAM). Later, the National Professional Schools (ENEP) of the UNAM and other universities adopted models that distinguished them from others. Public technological institutes are also organized into departments but at the same time they have developed their own particular methods of operation.

An analysis of size, organisational methods and types of structure shows that various types of institutions with very different sorts of steering exist side by side. Large institutions with a wide range of curriculums, programmes and levels are very complex due to the large numbers of people they involve. On the other hand, very

small institutions with barely the minimum staff to cover basic needs may see their life jeopardized. Structures based on schools and faculties or departments are not good or bad in themselves but are better or worse suited to the characteristics of each IHE. In Mexico, structures based on departments considered to be signs of innovation and creativity can also be slavish imitations that are inappropriate for a particular situation.

Curriculums available

The smallest IHEs (many teacher training schools, some technological institutes and certain private IHEs) offer few courses of study, in many cases only one. The situation varies widely in medium-sized and large institutions. Some have few programmes but a large number of students, while others have a wide range of programmes with disparate enrollment: courses with a lot of students and others with very few. The ratio of range to size is particularly remarkable in the Universidad Autónoma Metropolitana and the Autonomous Universities of Nuevo León (UANL) and Aguascalientes (UAA). In some other institutions, two thirds or more of the student body are concentrated in the five most saturated areas.

LAW AND UNIVERSITY AUTONOMY

Higher education in Mexico is governed by several different legal provisions: the Constitution, the Law to Coordinate Higher Education, the General Education Law, the organic laws of the universities, and the regulations of technological institutes. The coordination and enforcement of these involves the federal government, state governments, and in the case of private institutions, individuals. Teachers, students and executive authorities all play a part in collegiate bodies and the different institutional levels.

In Mexico there is a tradition favoring university autonomy. According to their organic laws, issued by the state congresses, the universities of San Nicolás de Hidalgo (Michoacán, 1919) and the Autonomous University of San Luis Potosí (1923) were the first autonomous ones. The federal government gave the National University of Mexico its autonomous status after a student movement demanding it in 1929. At present, with the exception of Veracruzana, de Occidente, and Quintana Roo universities, the Centro de Estudios Superiores of the State of Sonora and the Universidad Pedagógica, all public universities are autonomous. In accordance with the spirit of the law, autonomy is essential for universities to reach their goals. The principles of academic and investigative freedom are therefore inherent. The objective of autonomy is to keep university life free from government, political or sectarian interference. Today, society's expectation of greater accountability is a challenge that deserves to be included in the idea of autonomy.

In the past there were conflicts over the notion of university autonomy. On occasions it was interpreted as including the total independence of universities from the government and society. During the sixties and seventies student movements arose at most universities and university trade unions were created. This coincided with a rapid expansion of enrollment and a growth in the number of institutions. University autonomy was a source of controversy and, for that reason, after consulting university opinions through the ANUIES, in 1979 the federal government submitted a bill to Congress to legislate this matter.

Autonomy has two legal dimensions. Firstly, it must be understood as the exercise of certain powers that originally belong to the State and that are given to another body of its creation, and secondly, autonomy is granted only through a legal act issued by either the state or federal legislature. The nationalist, scientific and democratic spirit of solidarity and justice embodied in Article 3 also applies forcibly to higher education. University autonomy was defined in a new subsection of Article 3 of the Constitution (the seventh after the 1992 amendments):

> « Universities and other institutions of higher education that are given autonomy by law shall be entrusted with and be responsible for self-government, they shall pursue their goals of education, research, and disseminating culture in accordance with the principles of this article, with respect for academic and investigative freedom and for the free examination and discussion of ideas; they shall determine their own plans and programmes; they shall establish admission, promotion, and tenure criteria for their academic personnel and they shall manage their own capital. »

The aim of the Law to Coordinate Higher Education is to establish the bases for financing higher education among the federal, state, and municipal governments. It also provides for the creation of two councils to act as advisory bodies to the federal government: the Teacher Training Council and the Council of the National Technological Education System.

The law also establishes the federal government's obligation to allocate resources to public institutions of higher education in accordance with certain conditions (institutional planning, academic improvement programmes, and administrative improvement programmes) and priorities. Article 22 establishes the exemption from federal taxation enjoyed by public institutions of higher education. The federal government has a series of regulations and guidelines for the administration of centralized higher education and decentralized agencies. The National Polytechnic Institute (IPN) does not have autonomous status, but it does enjoy a high degree of decentralisation and self-government.

The organic laws of the autonomous public universities stipulate their goals, structure, forms of government, administrative methods, the rights and responsibilities of students and teachers, and general provisions applicable to their

functioning. In secondary sets of regulations, most universities establish admission criteria for students and teachers, promotion criteria, the powers, terms, and limitations of their collegiate bodies, and the obligations and rights of their executive authorities.

EXTERNAL DECISION-MAKING AND COORDINATING BODIES

The legal bases allow for different agencies, with different degrees of authority and influence, to participate in the coordination, management, and decision-making processes of institutions of higher education.

The federal government

The SEP is at the head of the federal education sector. The CONACYT, as the body in charge of scientific research policy, has an influence on decision-making at public universities and technological colleges. It also participates on the councils of research and teaching centers, generally of postgraduate level, such as the College of Mexico (COLMEX), the Center for Economic Teaching and Research (CIDE), and a further 24 institutions that make up the SEP-CONACYT group.

Within the SEP's central structure, four under-secretariats have contacts with higher education: the Under-secretariats for Educational Coordination and Planning, for Technological Education and Research, for Higher Education and Scientific Research, and for Basic Education, on which teacher training depends. The Under-secretariat for Educational Coordination and Planning allocates budgets, establishes guidelines for financing and expenditure, and collects national statistics on education. It is also under the obligation to create a national assessment system, as required by the General Education Law of 1993.

The Under-Secretariat for Education and Technological Research (SEIT) plays an administrative role in more than 100 technological institutes and similar institutions. The central authority has the power to regulate teaching activities, design curriculums, appoint directors, manage budgets and oversee labour relations between teachers and workers and the National Union of Education Workers (SNTE). The Under-secretariat for Higher Education and Scientific Research (SESIC) is responsible for coordination and for allocating resources to public universities.

The SESIC manages federal subsidies to autonomous public universities and technological universities. Similarly, it administrates the Fund for Higher Education Modernisation (FOMES), publishes national statistics on upper secondary and higher education, promotes assessment policies in higher education, acts as liaison with the ANUIES, issues professional credentials, keeps records of copyrights, and is in charge of designing and implementing the federal government's policies on public universities. It has no executive functions, does not participate in drawing up curriculums (through the FOMES, however, it does encourage the pursuit of certain

priorities), and plays no role in the government of universities nor in the appointment of their authorities.

ANUIES and FIMPES

There are two non-profit organisations that were founded on the initiative of institutions, not on that of the government: the National Association of Universities and Higher Education Institutions (ANUIES), created in 1950, and the Federation of Private Mexican Institutions of Higher Education (FIMPES), founded in 1981. These perform a coordinating function among their member institutions. In 1992, the Council of Public Universities and Similar Institutions (CUPIA) was created within the ANUIES to establish a forum for discussing, participating in, and achieving the common goals of public universities. These associations put their members' points of view before the federal and state governments and society at large. In addition, they gather together statistical information, produce periodicals and specialized publications, act as vehicles for institutions to obtain information, manage scholarship programmes and, on an informal basis, act as advisory bodies to the federal government. The role of the ANUIES in higher education has been crucial, particularly at times of conflict between the universities and the federal government or different state authorities. Under a joint initiative of the federal government and institutions of higher education, ANUIES and the SEP promoted what is today the Permanent National Higher Education Planning System (SINAPPES) in 1978.

The Board of the ANUIES is composed of the rector of the UNAM, the director general of the IPN, and one university rector from each region in the Association. This board, together with high-level officials from the SEP and the Treasury, constitute the National Coordinating Council for Higher Education Planning (CONPES).

SINAPPES

The original aim behind establishing the National Permanent Planning System of Higher Education (SINAPPES) was to generate favorable conditions that would allow the development of higher education institutions to be "oriented and regulated". According to the initial guidelines, the SINAPPES was intended to promote the "balanced development of the basic functions of institutions of higher education in order to respond to the training demands of professionals and the nation's requirements for economic development". Six regulatory areas were established within the SINAPPES: legal, organisation and coordination, development, budgeting and financing, implementation of plans and programmes, operations and that of follow-up and evaluation.

These agencies were integrated into a coordination network together with institutional planning units from each institution of higher education, state coordinating organisations, ANUIES regional councils, special technical commissions, and

the National Coordinating Council for Higher Education. This last body serves as the advisory agency for dealing with institutional and regional problems and is responsible for designing both general policies and national programmes. It is also in charge of linking higher education planning with national development and evaluating the progress of plans and programmes. Efforts to strengthen regional planning agencies have not been successful.

With this organisational scheme, the SINAPPES set out to promote the planning actions of all the institutions of higher education and implement the proposals of the 1978 National Higher Education Plan, together with the later plans proposed at different ANUIES assemblies in 1981, 1983, and 1985, and the Integral Programme for the Development of Higher Education (PROIDES) of 1986.

In the course of time, the organisation of the different bodies charged with implementing actions grew weak and the system is now largely defunct. The SINAPPES was intended as a consensus-building agency involving the State and the institutions of higher education, which – in the social and political context – was a strategy for developing actions coherent with policies for modernisation.

CONPES, CONAEVA and CENEVAL

CONPES was founded in 1979. Its responsibilities include designing mechanisms to enable the universities and other public institutions to implement the guidelines of the various national plans. The importance of CONPES has increased with time, especially since 1989. It is now a body for building consensus between federal authorities and the universities. This has given rise to important initiatives and refined several aspects of Mexico's current higher education policy, including the National Higher Education Assessment Commission (CONAEVA), FOMES, the scholarship and incentives programmes for academic personnel, CENEVAL, and so forth.

CONAEVA is responsible for promoting, conducting, and publishing assessments carried out in institutions of higher education, both institutional self-evaluations and those made by the Inter-institutional Committees for Higher Education Assessment. CENEVAL is also responsible for designing and holding admission and graduation examinations for the upper secondary and higher education systems.

State governments

Political relations between universities and state governments are smooth. However, save in the allocation of subsidies, formal government participation in public universities is practically nil. The exceptions are the Veracruzana, Occidente, and Quintana Roo Universities, where the state governors appoint the rectors and

have an influence on administrative matters and the recruitment of academic staff. At the Autonomous University of Querétaro a representative of the state governor has a seat on the Board.

INTERNAL ORGANISATION OF INSTITUTIONS

Although there are many models for the organisation of institutions of higher education, practically all of them – public and private, universities and technological colleges – have certain collegiate bodies and individual offices to regulate and carry out the decision-making process. The former are responsible for legislation, debating, and consultation, while the latter are executive authorities and have an influence on the collegiate bodies. The following explanation will be based on the organic laws of public universities.

As was seen, there is a degree of homogeneity in the functional models of institutions of higher education, where the historical tendency has been to separate the different professions into schools that are isolated from one another and to separate research from teaching. However, the concept of the department as the basic cell of academic organisation, which is the predominant trend in universities in the United States and Europe, is being introduced into Mexican institutions.

Collegiate bodies

The organic laws of the universities place collegiate bodies over the authority of officials. The former decide on the path to be taken in decision-making, provide a forum for problem solving, and legitimize decisions taken at lower levels in the hierarchy. Almost all have specific functions, although the guidelines in certain institutions are ambiguous. Collegiate bodies include university councils and technical councils, the former covering an entire university and the latter covering a school, faculty, or institute. Governing or steering committees exist at 15 public universities. Boards of trustees and ruling commissions are not found at all universities, but they are tending to become more common.

University councils

The university council is a representative collegiate body, also called the general council, academic college, university assembly, or steering council at some institutions. It is considered the university's highest authority and is empowered to regulate academic and administrative matters. It is also charged with approving study plans and programmes, approving the annual budget, authorizing the incorporation or revalidation of studies from private institutions, deciding on the granting of degrees and, in general, is competent in all matters not assigned to other authorities. In certain institutions its most important function is to appoint the

directors of schools, faculties, and institutions from a short list of three names proposed by the rectors after sounding out the corresponding community or after elections in the area in question. At 19 public universities, it is granted authority to appoint the rector.

These councils typically have members from three areas: the authorities, and representatives of students and staff. On some councils, students have as much as 59 per cent of the votes. In seven cases, administrative workers are also represented (in two instances, without power to vote). The rector is the council's president and the institution's general secretary serves as secretary to the council.

Governing committees and boards of trustees

At those universities where the rector or directors are not elected by the council, they are appointed by the governing committee or steering committee. These bodies comprise between five and 15 members, selected by the university council, and people from outside the institution can participate. They also intervene in disputes between collegiate bodies and staff committees. At the UNAM, the governing committee appoints the rector after sounding out opinion, and the directors of schools, faculties and institutions from a short list of three names proposed by the rector. The UAM's steering committee appoints the rectors of its different campuses from a short list of three submitted by the rector general.

Twenty public universities and most technological institutes have boards of trustees. At some of the institutions these bodies are responsible for looking after capital and for obtaining funds in addition to subsidies and student fees. At the UNAM and the UAM, the boards of trustees are also in charge of allocating resources, supervising expenditure and appointing the treasurer or comptroller. Generally, boards of trustees are composed of three or five members, some of whom are from outside the institution.

Technical councils

At the level under this one in university structure are schools or faculties, institutes or divisions. The collegiate bodies here are generally called technical councils. In some instances they are considered the highest authority in its area, and in others as an obligatory consultation body. They play a major role in academic affairs: they set down the general guidelines for their areas; work (on occasions with the approval of the university council); design or approve study plans and programmes; sanction academic appointments; and draw up or ratify the short list of candidates for the position of campus director.

The composition of these councils varies. At some universities student representation reaches 50 per cent, while the general figure is 30 per cent. The campus

director is the chairman of the council and the area secretary acts as its secretary. At most universities the executive authority of the campus or institution can veto technical council decisions. Informally, technical councils are also forums for discussing school or general university policies.

Other bodies

At some large or modern institutions there are other kinds of councils with the power to influence academic life. At the UAM, for example, every campus has its own academic council and at the UNAM there are also divisional councils, and area councils created in 1992 to study the problems common to groups of dependencies. Also found at the UNAM are the coordinating offices for Scientific and Humanities Research, and, although these are dependent on the rector, their highest collegiate authority is a technical council. Technical councils are responsible for recommending or giving tenure, particularly for full-time and part-time teachers. Although still in its early stages, this function is being transferred to special bodies called ruling commissions. These are responsible for organizing competitive examinations prior to admitting or promoting academic personnel. They are made up of other teachers and many of them have members without direct ties to the institution.

At a few universities, both public and private, there are collegiate bodies within the departments. In some they are called councils, in others, academies, and in yet others, colleges of professors. They have no precise functions but serve to debate matters and advise their immediately superior executive authority.

University trade unions began to proliferate in the 1970s. In formal terms they are not part of the university, but they do gather together and represent the interests of academic staff and workers. At many universities they became a parallel power to the authorities and overstepped their strictly defined powers in labour matters and defending their members' interests. They attempted to regulate which teachers should be admitted to universities and to jointly govern these institutions, whose legislation does not provide for such a situation. This is why the amendments made to Article 3 of the Constitution in 1979 specifically mention labour relations and the exclusive power of the university to set the rules for admitting, promoting and giving tenure to academic staff. The second part of the seventh subparagraph of the same Article reads as follows:

> The labor relations of both academic and administrative personnel shall be governed by Paragraph A of Article 123 of this Constitution, pursuant to the terms and mechanisms established by the Federal Labor Law in accordance with the nature of special work, in such a way as to ensure that they agree with the principles of autonomy, academic and investigative freedom, and the goals of the institutions to which this section refers.

Promotion of more stable labour relationships is still a challenge for some universities.

STUDENT AND TEACHER PARTICIPATION

Considering the history of Mexico's universities and the role they play in society, the participation of teachers and students in university policy is not unusual. With the exception of boards of trustees and ruling commissions, where there is no student representation, students and staff form a majority on collegiate bodies and counterbalance executive authorities. At certain times student power was dominant in entire universities and schools. The importance of student groups has now fallen at most universities, some of which have modified their by-laws to curb the strength of student organisations. Technical and university councils are still forums for institutional policy, where problems are debated and disputes are resolved between groups, schools, and authorities. In recent years, the political nature of these bodies has decreased and their activities now tend to concentrate on academic matters, with the exception, perhaps, of the councils of very large universities or those which have very large councils.

INDIVIDUAL OFFICES

Responsibility for executive tasks and the daily running of institutions falls to the incumbents of individual offices. They are responsible for a large part of the structure and functioning of the universities' sections and exercise leadership. Due to the legacy of the centralized model, these authorities concentrate a great deal of power within each institution and have an influence on the decisions of the collegiate bodies.

Rectors

At most Mexican universities founded and developed under the influence of the National University, the rector is the legal representative, budget manager, academic and institutional policy director, and chairman of the university council. He also chairs other commissions on an *ex officio* basis and is in charge of the university's relations with the outside world, particularly with the state and federal governments; his powers are far reaching. Except in the case of the Autonomous University of Aguascalientes, where their proposal must be submitted to the governing committee, the rector appoints the general secretary and the directors of the central administration; at many universities he also appoints the treasurer or places proposals before the corresponding collegiate bodies. Through the selection of short list of candidates, he has influence on the selection of the directors of schools, faculties, institutes, and other bodies; part of his authority in labour

matters is delegated to the general attorney, whom he also appoints. As the institution's representative he negotiates subsidies, prepares the annual budget and submits it to the university council, allocates most of the funds, handles the expansion and maintenance of physical facilities and, at many universities, signs each and every degree and certificate that the institution gives to its students.

To assist them in these tasks, rectors have a staff of officers and employees. The tendency here is towards professionalisation and for its tasks to require a greater degree of specialisation, for example academic planning, labour relations with the unions, finances, public relations, assessment, project design, publications, and other issues. At many universities these officers' links with the directors of other areas are not clear, and there is duplication of many activities.

Directors of schools, faculties, and institutes

These officers are academic personnel in charge of the academic direction of one area of an institution. Their functions are similar to those of the rector, only at the level of their area. They perform everyday executive functions, such as controlling the school, looking after its infrastructure, and making sure that teachers attend and work their allotted hours. The director of an area is also the president of its technical council. Within the council, the director proposes the appointment of teachers, study plans and programmes, and academic calendars; he also submits the area budget for approval and chairs special commissions. Area directors, at most institutions, also appoint interim teachers to cover unforeseen vacancies. Directors are empowered to appoint the secretary and officers of the campus and they hold their post for four years.

Heads of department

Although their characteristics and functions are different from those they have in North American and European universities, departments are tending to become the basic unit in the academic structure of many Mexican universities. A head of department is the executive authority whose functions are closest to academic management in the strictest sense: supervising teaching activities and promoting research by department members, coordinating the work of different groups, promoting publications, facilitating the purchase of infrastructure for the department, and so on. In large universities such as the UAM, the departmental pattern in fact shares certain similarities with small schools or faculties.

ADMINISTRATION AND INSTITUTIONAL GOVERNANCE

The management of institutions of higher education is typified by the attention demanded by everyday matters and problems. There is a tendency for

administrative routines to be influenced by the search for agreements by consensus. As a consequence, ad hoc solutions prevail in many cases rather than medium-term strategic planning. The hiring, promotion, and relocation of personnel is influenced by the unions and other private interests within each institution. An important characteristic is tenure for full-time academic staff which is acquired after three years in some institutions such as the UNAM and does not require a special qualifying examination like in other countries. Most academics and administrative workers spend their entire working lives in a single institution, which in fact becomes a closed market.

The development of the teaching profession is now an influential factor. The programmes implemented by the federal government since 1990 strengthens the role of individual and institutional performance assessment and at the same time increases the impact of local initiatives. However, there is wide scope for the culture of assessment, financial control, and strategic planning to develop. These concepts are new aspects of institutional practice.

As in all social institutions, positions of direction and control are subject to competition and rivalry. The political relationships that arise from this situation are ambiguous, contradictory, and dynamic. Often, they serve the institution well, since effective leadership promotes reforms, goes beyond the immediate, seeks connections with the outside world, and promotes dialogue between the institution, government, and society.

To summarize, the formal structure of institutions of higher education provides stable rules for their functioning, the creation of their collegiate bodies, the enforcement of their by-laws and regulations, but it is the methods of participation by the executive authorities, teachers, students and, to a lesser degree, administrative staff that determine institutional leadership.

6

CHALLENGES TO HIGHER EDUCATION

GENERAL OVERVIEW

The educational system grew and expanded for seven decades until it covered the area of primary schooling almost completely. At the same time, the increased number of opportunities in upper secondary and higher education available since the sixties satisfied many of the aims shared by the federal government, states, and individuals who built Mexico's present education in a combined effort.

Today's education is deeply involved in the late 20th-century change that Mexico is undergoing. Our climatic, regional, economic and cultural diversity present enormous challenges for public policies. The strategic role of education in the country's development depends on building up a high-quality system with equal opportunities of access and tenure. Flaws in the system increase social imbalance and waste public funds in addition to having a negative impact on the nation's general productivity and competitiveness. The great challenge facing higher education is to train men and women capable of carrying out the activities necessary for their own development and that of a society in the process of democratisation and globalisation.

The National Development Plan 1995-2000 was unveiled in May 1995 as a general policy framework of President Ernesto Zedillo's administration. In January 1996 the objectives of the PND were expressed in the Educational Development Programme. Chapter III which states the targets, strategies and policies for upper secondary and higher education.

The plan takes inspiration from both past experience and programmes currently in operation. The policies for the period 1995-2000 focus mainly on improving coverage and quality, promoting the development of academic staff, increasing the capacity to respond to community and industry demands, and improving the organisation and coordination of the system.

COVERAGE

The general shift of policy aims toward quality began to be helped by the slowdown in the population growth rate in the late seventies. However, not all

levels felt its effect as clearly as elementary education, since potential demand in upper secondary education grew faster than new opportunities did. Therefore, coverage as a target of education policy has different characteristics today from those of 30 years ago.

A primary factor that must be taken into account in meeting national demand for coverage is the vigorous expansion of basic education. The shortfall at this level will have to be attacked over the next five years. It should be noted that the shortfall in primary education affects one third of the population of an age to study sixth grade, and 60 per cent in the case of the final grade of lower secondary school.

If the targets for raising the number of pupils completing the sixth grade of primary school and the coverage of secondary education as put forward in the PND are met, demand for entrance into upper secondary and higher education will grow, particularly in regions that have lagged behind.

Another factor that influences the problems of upper secondary and higher education is the unequal growth of opportunities in these areas. Between 1980 and 1994, upper secondary student registration grew by 83 per cent, while the student body in higher education increased by only 68 per cent. This was how a new type of pressure began to build up whose effects are not so immediate as those felt in the seventies. If these trends are projected into the future they produce a scenario of a 25 per cent increase in demand for higher education in the year 2000 as compared to 1995.

In fact, if the 1994-1995 patterns of entry into higher education, the absorption rate for upper secondary school graduates and a slight (3.5 per cent) increase in the completive rate for the cohorts now in lower secondary school are taken into account, new entries into higher education will number 400 000 in the year 2000.

New opportunities in education will be opened on the basis of *a)* quality in design and operation, *b)* a consistent flow of demand, *c)* in any institution, low intake at the levels of upper secondary and higher education in comparison with the national average, *d)* lack of enthusiasm for creating new public institutions with the capacity to absorb demand, in accordance with national, state and institutional criteria, *e)* the balance of educational opportunities taking into consideration both its social relevance and the expectations of students, and *f)* labour markets, the development of professions, the demands of the productive sector, technological needs and regional development.

Lines of action

State or regional commissions on supply and demand will be created for the upper secondary and higher levels with the responsibility of forecasting supply and demand in each sphere. The commissions will propose ways for better institutional coordination in the processes of selecting and counselling candidates.

Projects for expanding coverage will contain innovative arrangements geared towards making academic structures, the intensive use of open learning, distance education and electronic media more flexible. The creation of New Institutions of Upper Secondary (IUSEs) and Higher Education (IHEs) will be the joint responsibility of the federal and state governments, promoting the decentralisation of services. Finally, the entrance of candidates into the different IUSEs and IHEs with official recognition will be gradually boosted.

Thanks to these measures the number of students enrolled in IUSEs will increase from 2 343 000 in 1994-1995 to 3 500 000 in the academic year 2000-2001. At the end of the next five years, 25 per cent of student enrollment in IUSEs will be in the technical professional options and 75 per cent in upper secondary. Thus, the student body in the technical professional option will grow by more than 85 per cent from 407 000 to 750 000 during this period.

The number of students in IHEs, including the postgraduate area, will rise from 1 400 000 in 1994-1995 to 1 800 000 in the year 2000. Also, efforts will be made to increase the share of the technological subsystem in higher education from 17 per cent to 25 per cent. The postgraduate area will be expanded 100 per cent in both the number of students and teachers.

QUALITY

The 1982 economic crisis established a new frame for higher educational policies. To begin with, government funds available shrank considerably, and from this time on the methods for the allocation of public funds for higher education were diversified and emphasized quality. Thus, additional funding arrangements emerged, based on individual results, such as the SNI and the Teaching Career Programme. At the same time, funds were created or built up for specific purposes, for example FOMES, SUPERA and those of CONACYT for research projects.

In spite of these and other advances, performance assessment mechanisms must be instituted and refined in each area of upper secondary and higher education. It is essential to achieve considerably more uniform academic results through better control of the mean quality of all education.

First, the definition and use of nationwide criteria for evaluating learning must be made general. It will be possible to found a system of common equivalents on these bases in the near future. The information about student learning obtained from applying common criteria will in turn feed teaching performance assessment processes, and as a result institutional evaluation will be benefitted. Other new challenges will be to calculate the unit cost per course in each institution and measure the impact of education on the labour market and production.

Lines of action

Funds for improving the quality of education provided by IUSEs and IHEs will be increased, with emphasis on enhancing the quality of teaching staff.

The existence of more than 300 study programmes in upper secondary education is a serious impediment that makes student mobility within the country difficult. Greater coherence will be fostered by reducing the number of variations, introducing a common core curriculum and establishing a system of examinations and equivalences shared by different types of educational modes.

In the selection processes for entrance to IUSEs and IHEs, users will be given information about the examination and the results of candidates. The design and evaluation of examinations will be governed by the criteria of equal opportunity. In turn, the application of standardized entrance and graduating examinations will broaden knowledge about the process of education.

The extreme rigidity of educational opportunities which compels students to choose a field of study very early increases the inefficiency of the higher education system. Any later modification or change is unduly complicated or costly in terms of time. Therefore, flexible syllabuses will be promoted so that students can move between institutions and have a wider range of choices.

Support will be provided for movement from one level, institution or educational mode to another. In higher education the transfer of study credits between modes and institutions will be made easier by means of equivalents and the recognition of curriculum blocks or individual subjects.

Activities and programmes that improve completive efficiency in both IUSEs and IHEs will receive funds. Investigation into completive efficiency, dropout, retention and failure will be stepped up.

The National Assessment System will refine the criteria, standards and procedures for evaluating teaching staff and student performance. External assessment of IHEs by the Interinstitutional Committee for the Assessment of Higher Education (CIEES) will be promoted, while non-classroom-based modes will be assessed in collaboration with the institutions.

A start will be made on drawing up the National Register of High Quality First Degree Courses, with incentives for participating students and teachers.

Educational institutions are committed to creating or, as the case may be, consolidating information and control systems in the areas of finances, accounting and school and physical resource management, and establishing methods for determining the unit cost of academic programmes and projects.

FURTHER TRAINING OF TEACHING STAFF

The rapid growth of student enrollment in higher education during the seventies increased the number of opportunities in teaching but outstripped the capacity of many institutions. This, together with student movements and union conflicts, led many institutions of higher education to pay more attention to their internal stability than to academic development. The performances of teachers, researchers, students and administrators was affected by these conditions. The result was wider variance in the general functioning of the system, and this adversely affected one of the great features of higher education, namely its prestige in the marketplace and in society.

Better trained academic staff are essential for improving the quality of education, and also for raising the income of teaching staff. The higher education system will depend increasingly on core curriculums, study programmes, centers and institutions of excellence that will operate as regional centers for educating, updating and training academic staff. Harmonious labour relations are essential in this field and they are already showing a trend towards improvement.

Lines of action

Teachers in IUSEs and IHEs will be encouraged to pursue further studies so as to increase the number of staff with postgraduate qualifications. Discovering and publicizing successes in updating and qualifying teachers will be an important feature.

Teaching staff selection and working conditions will be improved. The professionalisation of teachers will have to take each institution's model into account so as to integrate teaching and research more closely. In the case of teachers hired for particular courses the yardstick will be their experience and professional performance.

Programmes to stimulate performance will be strengthened, which will help to improve salaries for teaching staff, and collegiate bodies will be encouraged to take a greater part in them.

RELEVANCE

An economy that was protected by high tariffs for a long time put a restraint on technological development and the training of technicians. Under these conditions an inertia appeared that led to a situation where most leavers from basic education applied for admission to higher education, including universities, regardless of their academic aptitude. As a result, the number of students who complete their studies is low (50 per cent to 60 per cent of entrants) and the demand for first degree courses continues to be concentrated in traditional professions.

Each institution has to define its regional mission and the comparative advantages of study programmes very clearly. Crucial roles in this are played by *a)* communicating the results and quality of educational processes to society, *b)* regular curriculum adjustments to keep pace with advances in knowledge and the demand for instruction in them, *c)* the participation of actors from community and productive spheres in the processes of educational institutions relevant to them, *d)* flexibility in institutions to undertake joint actions with outside agents at the proper time, *e)* the community service of future graduates (*pasantes*), taking it as a vehicle for reinforcing the responsibility of students to society and their commitment to contribute towards meeting needs, *f)* the importance of research, through statutory definitions that facilitate cooperation with companies and in joint projects and which recognize the personal and institutional benefits stemming from this, and *g)* the sale of educational and research services by academic institutions with the dual purpose of obtaining funds in this way and of linking themselves organically with society and the market.

Lines of action

Support will be given to teaching and research programmes most closely linked with social and productive activities of national, regional and local importance. Social liaison councils will have a decisive role in strategy definition and to enrich curriculum changes, research and technological development.

ORGANISATION AND COORDINATION

Inter-institutional coordination has tried and tested agencies such as COSNET, ANUIES and FIMPES. The SINAPPES was inaugurated in 1978, and this included the creation of state and regional councils to provide appropriate environments for collaboration between numerous institutions and the authorities and between the public and private sectors. However, the effectiveness of the planning system has been unequal, some proposals have been acted upon, but there are also long periods of little activity.

The full use of scarce resources by various establishments in the same locality, state or region is still an aim that has not lost its strategic implication. Over the next ten years, the supply of high quality first degree and postgraduate programmes will depend to a large extent on the ability of institutions to cooperate with one another, something that will receive priority support.

The management of academic organisations will have to back up the complex social duties more efficiently. The task facing them is to eliminate the backlog of inertia and improve their performance. It is also necessary to adapt the operations of institutions to changing conditions of both internal and external origin. Flexibility means considering other educational institutions, firms, state or local

government authorities as potential associates. The agenda for the future envisages projects and programmes with specific aims and predetermined time-frames, as well as staff transfer and exchange. A fundamental aspect of future flexibility will be the participation of external actors in institutional processes.

Lines of action

Planning and assessment in IUSEs and IHEs will be reviewed and promoted, particularly those produced by CONPES and CONAEMS. Studies will be carried out to determine whether it would be wise to restructure the way bodies responsible for planning, assessment and coordination between institutions and sectors at both state and nationwide levels work.

Programmes to upgrade the quality of administrative and service personnel will be promoted.

The present system of information will be improved. Work will begin on a national information system on upper secondary and higher education, both for decision-making purposes and users of the education system.

Cooperation programmes with institutions in other countries for teaching staff exchanges and information sharing will be strengthened.

Mechanisms will be created to carry the "federalisation" of IUSEs and IHEs further. Studies will be carried out on steering, curriculum assessment and funding.

In the matter of fund allocation special attention will be given to creating wider opportunities, which means expanding demand. In order to obtain more resources, emphasis will be placed on creating or consolidating shared funds (those up for bid according to quality). Public resources for this type of education will be increased, sources of funding will be diversified and greater transparency and efficiency in resource management will be promoted.

Support will be given to alternative means of obtaining resources such as the provision of services, assistance to graduates and student participation.

STATISTICAL ANNEX

Table 1. **GDP, enrolment and total population, 1950-90**

	GDP[1]	Enrolment					Population
		Primary	Secondary	Higher secondary	Higher education	Total[2]	
1950	587 597	2 997 054	69 547	37 329	29 892	3 133 822	25 791 017
1960	1 140 735	5 342 092	234 980	106 200	. n.d.	5 683 272[3]	34 923 129
1970	2 115 576	9 248 190	1 082 377	335 438	271 275	10 937 280	48 225 238
1980	4 470 070	14 666 257	3 033 856	1 265 741	935 789	19 901 643	66 846 833
1990	5 271 539	14 401 588	4 190 190	2 100 520	1 252 027	21 944 325	81 249 645

1 GDP in constant prices of 1980.
2 Total enrolment does not include pre-school, job training and special education.
3 Does not include higher education.
Source Solana, Fernando. *Historia de la Educación Pública en México*. 1982.
SEP. *Estadística básica del sistema educativo nacional. Inicio de cursos 1990-1991*. 1991.

Table 2. **Student enrolment by level, 1993-94**

	Enrolment		Retention
	Beginning of the school year	End of the school year	
Pre-school	2 980 024	2 949 864	0.99
Primary	14 469 450	14 140 501	0.98
Job training	391 028	564 275	1.44
Secondary school	4 341 924	4 122 219	0.95
Vocational school	406 479	348 357	0.86
Higher secondary school	1 837 655	1 670 677	0.91
Teacher's training	120 210	71 987	0.59
Higher education[1]	1 247 817	1 238 061[2]	0.99
Total	**25 794 587**	**25 105 941**	**0.97**

1 The figure for higher education enrolment does not coincide with ANUIES statistics, as it refers to another moment in the academic year.
2 CONPES. *Datos Básicos de la Educación Superior*, 1994.
Source SEP. *Estadística básica del sistema educativo nacional. Inicio de cursos 1993-1994*, 1994.
SEP. *Estadística básica del sistema educativo nacional. Fin de cursos 1993-1994*, 1995.

Table 3. **Enrolment ratios in primary education, 1910-90**

	Total population	Primary enrolment	Enrolment ratios
1910	15 160 369	848 000	30.4[1]
1921	14 334 780	868 040	39.7[1]
1930	16 552 722	1 299 899	52.8[1]
1940	19 653 552	1 960 755	60.8[1]
1950	25 791 017	2 997 054	71.6[1]
1960	34 923 129	5 342 092	89.1[1]
1970	48 225 238	9 248 190	104.0[2]
1975	–	11 461 415	109.0[2]
1980	66 846 833	14 666 257	121.0[2]
1985	–	15 124 160	124.0[2]
1990	81 249 645	14 401 588	115.0[2]
1992	–	14 425 669	113.0[2]

1 Enrolment ratios estimates.
2 UNESCO. *Anuario Estadístico*, 1985, 1987 and 1989.
Source Calculated on the basis of SEP. *Estadística Básica del Sistema Educativo Nacional. Inicio de cursos*, Vol. I, 1970-1971 and 1980-1981.
INEGI. *Censos Históricos*.
Solana, Fernando, *Historia de la Educación Pública en México*, 1982.

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Table 4. **Enrolment ratios in lower secondary education, 1950-90**

	Lower secondary enrolment	Enrolment ratios[1]
1950	69 547	3.7
1960	234 980	9.0
1970	1 102 217	28.7
1980	3 033 856	55.6
1990	4 190 190	62.6

1 Enrolment ratio estimates.

Source: Calculated on the basis of SEP, *Estadística Básica del Sistema Educativo Nacional. Inicio de cursos*, Vol 1, 1970-1971 and 1980-1981
UNESCO, *Anuario Estadístico*, 1985, 1987 and 1989.
INEGI, *Censos Históricos*
Solana, Fernando, Historia de la Educación Pública en México, 1982

Table 5. **Enrolment ratios in upper secondary education, 1970-94**

	Bachillerato		Middle professional	Total
	Propedeutic	Bivalent		
1970-1971	215 417	64 078	33 861	313 356
1971-1972	260 886	68 144	41 766	370 796
1972-1973	313 156	81 818	48 604	443 578
1973-1974	344 659	114 008	58 678	517 345
1974-1975	410 370	136 161	68 622	615 153
1975-1976	445 367	162 594	78 382	686 343
1976-1977	456 832	213 297	81 061	751 190
1977-1978	552 343	196 155	82 184	830 682
1978-1979	656 365	212 933	86 694	955 992
1979-1980	727 014	215 912	97 270	1 040 196
1980-1981	831 203	226 541	122 391	1 180 135
1981-1982	858 351	284 544	220 800	1 363 695
1982-1983	919 325	314 556	301 553	1 535 434
1983-1984	998 575	312 324	316 619	1 627 518
1984-1985	1 032 904	394 918	317 061	1 744 883
1985-1986	1 132 602	405 504	359 130	1 897 236
1986-1987	1 158 528	368 865	408 684	1 936 077
1987-1988	1 215 962	370 136	426 170	2 012 268
1988-1989	1 237 144	405 641	427 686	2 070 471
1989-1990	1 268 467	409 972	413 481	2 091 920
1990-1991	1 291 664	429 962	378 894	2 100 520
1991-1992	1 267 588	457 706	410 900	2 136 194
1992-1993	1 278 080	488 940	410 205	2 177 225
1993-1994	1 307 010	530 645	406 479	2 244 134
1994-1995	1 352 881	583 517	407 079	2 343 477

Source: SEP, *Estadística básica del sistema educativo nacional. Inicio de cursos*, Vol 2. Several years

Table 6. **Student enrolment, 1993-94, *Bachillerato* sub-systems**

	Enrolment
General 2-year *Bachillerato*	86 227
General 3-year *Bachillerato*	786 591
Pedagogical *Bachillerato*	32 042
Art *Bachillerato*	1 305
Technological *bachillerato*	530 645
Colegio de Bachilleres	336 450
Cooperative *Bachillerato*	64 395
Total	**1 837 655**

Source: SEP, *Estadística básica del sistema educativo nacional Inicio de cursos 1993-1994*, Vol. 2, 1994.

Table 7. **Enrolment in upper secondary education, open systems, 1993-94**

Institution	Enrolment
Open *Bachillerato*	256 033
Technological *Bachillerato*	9 687
Colegio de Bachilleres	30 434
Middle Professional Education	1 790
National Polytechnic Institute	268
UNAM	264
Total	**298 476**

Source: SEP, *Estadística básica del sistema educativo nacional Inicio de cursos 1993-1994*, Vol. 2, 1994.

Table 8. **Enrolment in upper secondary education by type of control, 1993-94**

Control	Enrolment
Particular	389 083
Autonomous	331 100
State	485 370
Federal	632 102
Total	**1 837 655**

Source: SEP, *Estadística básica del sistema educativo nacional Inicio de cursos 1993-1994*, Vol. 2, 1994.

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Table 9. **First degree enrolment by type of institution,[1] 1980-81 to 1993-94**

Type	1980-1981		1984-1985		1988-1989		1993-1994	
	Number	%	Number	%	Number	%	Number	%
Public	666 420	84.85	815 342	84.37	898 420	83.99	936 646	79.19
Universities	558 900	71.16	670 061	69.33	731 592	68.40	715 077	60.45
Technological institutes	100 533	12.80	132 765	13.73	159 239	14.88	212 721	18.03
Others	6 967	0.89	12 516	1.29	7 589	0.70	8 848	0.70
Private	118 999	15.15	151 042	15.62	171 145	16.00	246 505	20.83
Universities	78 862	10.04	90 310	9.3	114 505	10.70	181 768	15.36
Others	40 137	5.11	60 732	6.28	56 640	5.29	64 737	5.45
Total	**785 419**	**100.0**	**966 384**	**100.0**	**1 069 565**	**100.0**	**1 183 151**	**100.0**

1. Does not include teacher training schools.
Source: Calculated on the basis of ANUIES, *Anuario estadístico. Licenciatura en Universidades e Institutos Tecnológicos*, 1980, 1986, 1989 and 1994 and information from DGES, *Coordinación General de Información*

Table 10. **First degree annual enrolment percentage growth by type of institution, 1980 to 1994[1]**

Type	1980-1984	1984-1988	1988-1994	1980-1994
Public	4.13	1.95	2.65	0.83
Universities	3.70	1.76	-0.45	1.93
Technological institutes	5.73	3.70	6.00	6.02
Others	12.40	-9.5	1.31	1.72
Private	4.90	2.51	5.75	7.54
Universities	2.75	4.85	6.63	10.63
Others	27.78	-0.72	3.70	2.61
Total	**4.23**	**2.04**	**3.20**	**2.00**

1. Does not include teacher training schools.
Source: Calculated on the basis of ANUIES, *Anuario estadístico. Licenciatura en Universidades e Institutos Tecnológicos*, 1980, 1986, 1989 and 1994 and information from DGES, *Coordinación General de Información*

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Table 11. **Number of institutions and first degree student enrolment, 1993-94**

Type of institution	Number of institutions	Enrolment	% of enrolment
Public	**390**	**1 026 969**	**78.76**
Universities	39	715 077	54.84
Autonomous	34	661 534	
State[1]	4	51 417	
UPN	1	2 126	
Technological institutes	110	212 721	16.36
IPN	1	55 685	
Technological	72	141 444	
Agricultural	22	4 915	
Marine	4	1 810	
Forestry	1	61	
ODE[2]	7	2 789	
Others[3]	3	8 848	
Teacher training	215	90 323	6.93
Others	25	8 848	0.63
Private	**358**	**277 178**	**21.24**
Universities	49	181 768	13.94
Teacher training	111	30 673	2.35
Others	198	64 737	4.94
Total	**748**	**1 304 147**	**100.00**

Note: The figure for higher education enrolment does not coincide with ANUIES statistics, as it refers to another moment in the academic year.

1. State universities: *Universidad de Occidente, Universidad de Quintana Roo, Universidad Veracruzana* and *Centro de Estudios Superiores del Estado de Sonora*.
2. Public decentralised bodies.
3. Universidad Tecnológica de la Mixteca, Universidad Autónoma Chapingo, Universidad Autónoma Agraria "Antonio Narro".

Source: ANUIES *Anuario estadístico 1994. Licenciatura en Universidades e Institutos Tecnológicos. Information provided by DGES, Coordinación General de Información.*

Table 12. **Decentralisation of first degree enrolment at universities and technological institutes, 1970-94**

	1970-71		1980-81		1985-86		1993-94	
	Number	%	Number	%	Number	%	Number	%
Federal District	112 722	53.2	227 837	31.2	238 118	24.6	269 394	22.8
All States	99 104	46.8	503 454	68.8	728 266	75.4	913 757	77.2
Total	**211 826**	**100.0**	**731 291**	**100.0**	**966 384**	**100.0**	**1 183 151**	**100.0**

Source: Calculated on the basis of ANUIES, *Anuario estadístico. Licenciatura en Universidades e Institutos Tecnológicos*, 1980, 1990 and 1994.

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Table 13. **Enrolment in first degree by sex and subject areas, 1984-85 to 1993-94**

Subject areas by sex	1984-85	%	1988-89	%	1993-94	%	Annual growth 1985-94
Agriculture							
Men	77 728	87.4	55 751	84.4	27 030	79.1	-11.07
Women	11 168	12.6	10 274	15.5	7 130	20.9	-4.86
Total	88 896	100.0	66 025	100.0	34 160	100.0	-10.08
Natural and exact sciences							
Men	17 418	63.2	16 486	60.0	12 683	56.5	-3.50
Women	10 138	36.8	11 012	40.0	9 781	43.5	-0.40
Total	27 556	100.0	27 498	100.0	22 464	100.0	-2.25
Health							
Men	65 750	52.1	53 129	45.3	45 894	40.6	-3.91
Women	60 403	47.8	64 056	54.7	67 289	59.4	-1.19
Total	126 153	100.0	117 185	100.0	113 183	100.0	-1.20
Social and administrative sciences							
Men	232 373	54.8	250 758	50.5	270 119	45.7	1.69
Women	191 009	45.1	245 474	49.5	321 296	54.3	4.20
Total	423 382	100.0	496 232	100.0	591 415	100.0	3.78
Education and Humanities							
Men	12 404	43.3	14 010	40.5	12 523	34.8	0.11
Women	16 218	56.6	20 587	59.5	23 477	65.2	4.20
Total	28 622	100.0	34 597	100.0	36 008	100.0	2.58
Engineering and technology							
Men	226 624	83.4	261 297	79.6	287 367	74.5	2.67
Women	45 151	16.61	66 731	20.3	98 554	25.2	9.06
Total	271 775	100.0	328 028	100.0	385 921	100.0	3.97
Total							
Men	632 297	65.4	651 431	60.9	655 624	55.4	0.40
Women	334 087	35.6	418 134	39.1	527 527	44.6	5.21
Total	966 384	100.0	1 069 565	100.0	1 183 151	100.0	2.27

Source ANUIES. *Anuario estadístico. Licenciatura en Universidades e Institutos Tecnológicos.* 1985, 1989 and 1994

Table 14. **First degree efficiency, 1981-82 to 1993-94**

Period	Students[1]		
	New entrants	Graduated	Efficiency %[2]
Total			
1981-1982 to 1985-1986	208 315	106 693	51 2
1985-1986 to 1989-1990	226 650	118 456	52 3
1989-1990 to 1993-1994	241 194	119 108	49 4
Public			
1981-1982 to 1985-1986	172 906	87 283	50 5
1985-1986 to 1989-1990	187 482	97 169	51 8
1989-1990 to 1993-1994	189 233	88 177	46 6
Private			
1981-1982 to 1985-1986	35 409	19 410	54 8
1985-1986 to 1989-1990	39 168	21 288	54 4
1989-1990 to 1993-1994	51 961	30 931	59 2

1. Does not include teacher training schools.
2. Average length of studies is five years.

Source: Calculated on the basis of ANUIES, *Anuario estadístico. Licenciatura en Universidades e Institutos Tecnológicos*, 1981 to 1994 and data provided by DGES, *Coordinación General de Información* and SEP, *Estadística básica del sistema educativo nacional. Inicio de cursos 1993-94*, Vol. 2, 1994.

Table 15. **Institutions and student enrolment in graduate courses, 1993-94**

Type of institution	Number of institutions	Enrolment	% of enrolment
Public	**112**	**41 574**	**75.53**
Universities	37	32 076	58 41
Autonomous	34	31 556	
State	2	239	
UPN	1	281	
Technological institutes	36	4 542	8 27
IPN	1	1 755	
Technological	23	1 441	
Agricultural	1	56	
Centers	8	1 015	
Marine	1	7	
Others[1]	2	268	
Teacher training	9	1 449	2 64
Others	30	3 507	6 39
Private	**66**	**13 336**	**24.29**
Universities	35	9 014	16 41
Others	31	4 322	7 87
Total	**199**	**54 910**	**100.00**

1. Universidad Autónoma Chapingo and Universidad Autónoma Agraria "Antonio Narro".

Source: ANUIES, *Anuario estadístico 1994. Posgrado*, 1995.
Information provided by DGES, *Coordinación General de Información*.

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Table 16. **Graduate enrolment by sex, 1984-85 to 1993-94**

	1984-1985	%	1988-1989	%	1993-1994	%	Annual growth 1985-1994
Specialisation							
Men	8 890	73.2	10 135	68.7	10 729	60.9	2.1
Women	3 245	26.7	4 622	31.3	6 884	39.1	8.7
Total	12 135	100.0	14 757	100.0	17 613	100.0	4.2
Master's							
Men	16 753	71.0	18 233	68.6	21 644	63.2	6.6
Women	6 833	29.0	8 328	31.4	12 559	36.8	6.9
Total	23 586	100.0	26 561	100.0	34 203	100.0	4.2
Doctorate							
Men	830	63.0	880	65.8	2 001	64.7	10.3
Women	489	37.0	457	34.2	1 093	35.3	9.3
Total	1 319	100.0	1 337	100.0	3 094	100.0	9.4
Total							
Men	26 473	71.5	29 248	68.6	34 374	62.6	2.94
Women	10 567	28.5	13 407	31.4	20 536	37.4	7.66
Total	**37 040**	**100.0**	**42 655**	**100.0**	**54 910**	**100.0**	**4.47**

Source Calculated on the basis of ANUIES, *Anuario estadístico Posgrado*, 1985, 1989, 1994

Table 17. **Institutions with highest graduate population, 1993-94**

	Total population
UNAM	13 065
Autonomous University of Nuevo León	2 611
University of Guadalajara	2 591
ITESM	2 006
National Polytechnic Institute	1 755
University of Guanajuato	1 339
La Salle University	872
Technological University of Mexico	981
Autonomous University of Chihuahua	838
Autonomous University of the State of Mexico	882
Subtotal	**26 940**
All other institutions	27 970
Total	**54 910**

Source ANUIES, *Anuario estadístico 1994 Posgrado*, 1995

Table 18. **Public current expenditure distribution by level of education, 1970-92**

Percentage

	1st level	2nd level	3rd level	NDL[1]
1970	47.7	27.2	10.4	11.5
1975	42.9	31.1	12.6	10.3
1980	31.7	24.2	12.1	30.1
1985	27.4	26.8	17.6	24.2
1990	26.7	29.6	16.5	21.6
1992	28.6	26.6	14.7	23.9

1. Not distributed by levels.
Source: Calculated on the basis of UNESCO, *Anuario Estadístico*. Various years.

Table 19. **Unit expenditure by level of education, 1992**

Constant prices 1980

	Budget	Enrolment	Unit spending
Initial schooling	306 427 230	23 433	13 077
Initial non-schooling education	747 738 880	253 224	2 953
Special education	2 581 402 339	216 960	11 898
General pre-school	10 259 756 252	1 760 910	5 826
Indigenous pre-school	1 240 392 212	233 250	5 318
Pre-school-community courses	299 126 774	49 385	6 057
General primary	48 968 365 738	9 506 013	5 151
Indigenous primary	4 043 986 293	640 096	6 318
Primary-community courses	485 677 276	84 755	5 730
General secondary	12 418 998 821	1 503 026	8 263
Technical secondary	11 952 066 389	1 055 018	11 329
Secondary for workers	484 665 603	75 315	6 435
Televised secondary	1 759 534 791	232 015	7 584
General *bachillerato*	8 189 184 115	668 432	12 251
Technical *bachillerato*	7 029 580 341	441 738	15 913
Pedagogical *bachillerato*	132 296 070	10 848	12 195
Vocational school	2 853 624 370	220 023	12 970
First degree teacher training: Pre-school level	478 143 224	7 128	67 080
First degree teacher training: Primary level	947 796 056	14 322	66 178
First degree teacher training: Secondary level	683 946 315	9 562	71 528
Technical first degree	8 667 882 190	197 737	43 835
University first degree	15 533 983 164	712 079	21 815
Graduate level and research	7 606 171 280	37 755	201 461
Adult education (CEBA)	260 646 983	76 062	3 427
Adult literacy (INEA)	944 166 281	1 009 181	936
Adult basic education	1 663 812 215	1 511 144	1 101
Job training	1 409 696 911	870 053	1 620
Support to education under other Secretariats	6 692 969 319	8 284 899	-
Sport culture and recreation	5 402 279 692	-	-
Total	**164 045 317 124**	**29 704 363**	-

Source: SEP, *Compendio Estadístico del Gasto Educativo*, 1994, 1995.

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Table 20. **Scholarships awarded in 1992 and 1993**

Type of scholarships and educational level	1992	1993
Federal schools		
Basic education	41 474	17 832
Higher secondary	36 825	27 738
Higher education	7 971	11 592
Others	200	192
FIDUCAR		
Primary	3 148	2 118
Secondary	11 071	9 245
For indigenous students		
Basic education	58 770	56 790
Higher secondary and higher education	5 162	7 781
National solidarity programme		
Children in solidarity	381 835	743 173

Source: SEP, *Compendio estadístico por entidad federativa*, 1994, 1995.

Table 21. **Federal expenditure on higher education**

In million pesos, constant 1980 prices

	1982	1985	1988	1991	1994
Teacher schools[1]	5.3	19.0	179.5	333.4	573.0
Teacher schools 1980 prices	2.6	2.0	2.3	2.1	2.22
Teacher schools % total budget	7.4	8.3	8.9	8.2	8.2
Technological[1]	22.8	61.9	1 255.5	2 517.0	1 901.4
Technological 1980 prices	11.2	6.4	6.4	6.9	7.38
Technological % total budget	31.6	27.1	25.4	27.0	27.3
University[1]	38.2	136.3	1 255.5	3 206.8	4 141.1
University 1980 prices	18.8	14.1	15.7	15.9	16.0
University % total budget	53.0	59.7	62.5	61.8	59.5
Construction % total budget	8.0	4.8	3.1	3.0	5.0
Total current prices	**72.1**	**228.2**	**2 008.9**	**4 072.5**	**6 615.5**
Total in 1980 prices	**35.6**	**23.7**	**25.1**	**25.7**	**25.6**

1. Current prices.

Source: Carlos Salinas, *Sexto Informe de Gobierno*, 1994 (Annex).

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Table 22. **Income sources in public state universities and other public institutions in 1993**

In thousand pesos, constant 1980 prices

Sources	Public state universities		Other public institutions	
	Absolute	%	Absolute	%
Federal subsidy	11 189.5	60.3	14 942.6	92.8
State subsidy	5 502.5	29.7	Not applicable	Not applicable
Own income: enrolment, study fees, services, etc.	1 852.9	10.0	1 152.2	7.2
Total	**18 543.9**	**100.0**	**16 094.9**	**100.0**

Source: SEP/CONPES, *Agenda Estadística de la Educación Superior, 1993*, Vol. 1 and Vol. 2, 1994.

Table 23. **Number of institutions created, 1980-84 to 1992-94**

Type	1980-1984	1984-1988	1988-1992	1992-1994
Public	**20**	**11**	**13**	**12**
Universities	0	0	1	2
Technological institutes	22	7	11	5
Teacher training schools	1	0	1	0
Others	–3	4	0	5
Private	**24**	**21**	**23**	**23**
Universities	13	77	4	11
Technological institutes	–4	2	–3	2
Teacher training schools	2	–1	0	0
Others	13	13	22	10
Total	**44**	**32**	**36**	**35**

Source: Calculated on the basis of ANUIES, *Anuario estadístico: Licenciatura en Universidades y Institutos tecnólogicos*, 1980, 1984, 1990 and 1994; ANUIES, *Sistema Nacional de Información para la Educación Superior*, 1993, 1994.

Table 24. **FOMES expenditure, 1990-94**

In thousand pesos, constant 1980 prices

Institution[1]	1990	1991	1992	1993	1994
Public state universities	633 200	1 029 800	877 800	1 103 600	1 066 300
Other institutions	33 600	136 100	529 200	490 800	301 400
Total	**666 800**	**1 165 900**	**1 407 000**	**1 594 400**	**1 367 700**

1. Does not include teacher training schools.

Source: Information provided by SEP/SESIC, *Dirección General de Educación Superior*, 1994.

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Table 25. **Academic personnel in universities and technological institutes at first degree level, 1969-94**

	Number		Number
1969-1970	25 056	1982-1983	79 934
1970-1971	28 065	1983-1984	92 926
1971-1972	31 037	1984-1985	95 779
1972-1973	36 350	1985-1986	91 183
1973-1974	41 893	1986-1987	97 139
1974-1975	47 529	1987-1988	100 965
1975-1976	43 199	1988-1989	104 207
1976-1977	52 294	1989-1990	105 058
1977-1978	52 791	1990-1991	109 475
1978-1979	58 207	1991-1992	113 238
1979-1980	69 214	1992-1993	120 183
1980-1981	72 742	1993-1994	123 290
1981-1982	77 209		

Source: For 1969-1979, Miguel Angel Casillas, *Académicos. Lenta Transición hacia la modernidad*, *El Cotidiano*, No. 28, 1989, based on Solana, F. *et al.*, *Historia de la Educación en México*, 1981. From 1980, ANUIES, *Anuario Estadístico Licenciatura en Universidades y Institutos Tecnológicos*, various years.

Table 26. **Benefits and annual salaries for academic and administrative staff in state universities, 1994**

In thousand pesos, constant 1980 prices

Academic			Administrative		
	Annual total	% of annual base wage		Annual total	% of annual base wage
Total benefits	6 247 915	101 3	Total benefits	2 791 138	71 2
Wage-linked	4 220 512	68 4	Wage-linked	2 276 746	58 1
Non wage linked	2 027 403	32 9	Non wage linked	514 392	13 1
		% of annual integrated wage			% of annual integrated wage
Integrated wage	12 416 259	100 0	Integrated wage	6 709 152	100 0
Base wage	6 168 344	49 7	Base wage	3 918 014	58 4
Total benefits	6 247 915	50 3	Total benefits	2 791 138	41 6

Source: SEP-DGES, *Agenda estadística*, Dec. 1994

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Table 27. **Monthly cost of permanent staff in state universities, 1994**

In thousand pesos, constant 1980 prices

Academic						Administrative			
Category	Full-time	Part-time	Number of hours	Monthly cost	%	Type	Posts	Monthly cost	%
Professor C	11.3	0.42		47 700	10.9	Basic	46 956	151 600	48.6
Professor B	9.0	0.61		32 900	7.5	Executive	9 964	160 200	51.4
Professor A	11.7	1.92		38 400	8.8	**Total**	**56 920**	**311 800**	**100.0**
Associate C	21.9	3.97		62 900	14.3				
Associate B	16.0	6.21		44 200	10.1				
Associate A	15.1	3.48		35 000	8.0				
Hourly B			390 635	90 700	20.7				
Hourly A			211 952	42 100	9.6				
Others	23.1	8.72	0	44 700	10.2				
Total	**108.2**	**25.33**	**602 587**	**438 600**	**100.0**				

Source SEP-DGES, *Agenda estadística*, Dec. 1994

Table 28. **Cost of academic and administrative staff in state universities in 1994**

Constant 1980 prices

Academic staff			Administrative staff		
Number of teaching hours paid every week	Annual cost of academic staff (million pesos)	Annual cost per hour (thousand pesos)	Number of work hours paid every week	Annual cost of staff (million pesos)	Annual cost per hour (thousand pesos)
1 848 447	**11 060 500**	**208 500**	**2 276 800**	**6 559 700**	**109 400**

Source: SEP-DGES, *Agenda estadística*, Dec 1994.

Table 29. **Budget allocation by function in state universities in 1994**

In million pesos, constant 1980 prices

	Teaching	Research	Cultural activities	Administrative support	Total
Percentage	66.23	9.26	8.24	16.27	100.00
Total	**14 175 400**	**1 982 100**	**1 761 900**	**3 482 900**	**21 402 400**

Source: SEP-DGES, *Agenda estadística*, Dec 1994.

Table 30. **CAPFCE expenditure on building,[1] 1982-94**

In million pesos, constant 1980 prices

	Budget			
	CAPFE expenditure	% higher education	Number of buildings	% higher education
1982	1 296.96	16.8	3 067	13.7
1983	744.62	13.0	2 751	9.9
1984	689.14	9.8	1 901	5.8
1985	777.51	11.3	2 493	6.2
1986	442.89	12.1	1 845	6.8
1987	337.26	10.9	1 976	6.2
1988	461.58	10.3	2 038	5.3
1989	543.11	14.9	2 196	8.2
1990	700.85	16.3	2 835	10.7
1991	995.96	19.0	3 254	13.5
1992	997.79	22.6	3 403	15.4
1993	1 241.28	19.4	3 854	17.2
1994	1 425.38	20.5	5 340	21.5

1. Includes technological institutes and state universities.

Source: SEP, *Compendio estadístico del gasto educativo*, 1994, 1995.
Information provided by CAPFCE, Subdirección Técnica.

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Table 31. **CAPFCE expenditure in buildings for first degree and graduate studies, 1994**[1]

In thousand pesos, constant 1980 prices

	Classrooms	Laboratories	Workshops	Others	Total spaces	Total expenditure
Undergraduate	753	231	48	3 276	4 308	111 278 015.4
Graduate	33	44	6	480	563	207 082 692.2
Total	**786**	**275**	**54**	**3 756**	**4 871**	**318 360 707.6**

1 Includes technological institutes and public state universities.

Source SEP, *Compendio estadístico por entidad federativa*, 1994, 1995
Information provided by CAPFCE, Subdirección Técnica

Table 32. **Federal expenditure on science and technology, by sector, 1994**

In thousand pesos, constant 1980, prices

	Expenditure	%
Agriculture and water resources	1 680 300	7 96
Trade and industrial promotion	417 700	1 97
Communications and transport	237 200	1 12
Social development	70 000	0 33
Public education	13 782 000	65 29
Energy, mines and government-owned industry	3 974 900	18 83
Finance	–	–
Navy	38 000	0 18
Fisheries	1 305 700	0 66
Justice	73 700	0 34
Budget and programmes	–	–
Health	673 200	3 18
Other	17 100	0 08
Total	**22 270 400**	**100.00**

Source SEP/CONACYT, *Indicadores de actividades científicas y tecnológicas*, 1994

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Table 33. **Science and technology personnel, 1991**[1]

	Scientists and engineers	Technicians	Support personnel	Total
Government	**11 304**	**9 043**	**8 139**	**28 486**
SEP-CONACYT	1 059	847	762	2 668
Other	10 245	8 196	7 377	25 818
Higher education	**11 125**	**8 900**	**8 010**	**28 035**
Public universities	10 756	8 605	7 744	27 105
UNAM	2 641	2 113	1 109	5 863
Private universities	369	295	266	930
Private non-profit inst	41	33	30	104
Total	**22 470**	**17 976**	**16 719**	**56 625**

1 Excluding business enterprises.
Source: SEP/CONACYT, *Indicadores de actividades científicas y tecnológicas*, 1994

Table 34. **Members of the national system of researchers by area, sex, category and level, 1994**

	National researchers					
Area	Candidates	Level I	Level II	Level III	Subtotal	Total
Physics and Mathematics	**168**	**488**	**181**	**94**	**763**	**931**
Men	148	426	160	83	669	817
Women	20	62	21	11	94	114
Biological, Biomedical and Chemical Sciences	**630**	**907**	**258**	**116**	**1 281**	**1 911**
Men	381	600	203	100	903	1 284
Women	249	307	55	16	378	627
Social sciences and Humanities	**382**	**836**	**211**	**116**	**1 163**	**1 545**
Men	204	504	144	95	743	947
Women	178	332	67	21	420	598
Engineering and Technology	**503**	**781**	**157**	**51**	**989**	**1 492**
Men	423	713	146	50	909	1 332
Women	80	68	11	1	80	160
Total	**1 683**	**3 012**	**807**	**377**	**4 196**	**5 879**
Men	1 156	2 243	653	328	3 224	4 380
Women	527	769	154	49	972	1 499

Source: SEP-CONACYT, *Indicadores de actividades científicas y tecnológicas*, 1994

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Table 35. **Distribution of population aged 15 and over by level of education, 1970 and 1990**

Level of education	1970		1990	
	Population	%	Population	%
Total	25 938 558	100.0	49 610 876	100.0
No schooling	8 199 383	31.6	6 667 481	13.4
Uncompleted primary	10 080 693	38.9	11 289 043	22.8
Completed primary	4 358 971	16.8	9 553 163	19.3
Post-primary education	3 290 396	12.7	21 087 094	42.5
Not specified	9 115	0.0	1 014 095	2.0

Source: INEGI, *XI Censo General de Población y Vivienda 1990. Perfil Sociodemográfico*, 1991.

Table 36. **Distribution of total working population and professionals by economic sector, 1990**

Sector	Population aged 25 and over	%	Professionals	%
Total	16 113 945	100.0	1 539 040	100.0
Primary	3 638 076	22.6	45 108	2.9
Secondary	4 249 333	26.4	330 219	21.5
Tertiary	7 727 113	48.0	1 112 928	72.3
Not specified	499 423	3.1	50 785	3.3

Note: Primary: agriculture, livestock, forestry, hunting and fishing
Secondary: mining, oil and gas, manufacturing, electricity, construction
Tertiary: trade and services.
Source: INEGI, XI *Censo General de Población y Vivienda*, 1990.

Table 37. **Distribution of working population aged 25 and over and professionals by income groups, 1990**

Income groups	Working population aged 25 and over		Working professionals aged 25 and over	
	Absolute	%	Absolute	%
No income	1 026 220	6.37	18 206	1.18
Up to 1 minimum wage	2 887 350	17.92	73 067	4.75
Over 1 up to 2 m.w.[1]	5 341 350	33.15	216 537	14.07
Over 2 up to 3 m.w.	2 653 976	16.47	245 265	15.94
Over 3 up to 5 m.w.	1 934 698	12.01	379 410	24.65
Over 5 m.w.	1 580 849	9.81	549 888	35.73
Not specified	689 502	4.28	56 667	3.68
Total	**16 113 945**	**100.00**	**1 539 040**	**100.00**

1 m.w. = minimum wage.
Source: INEGI, XI *Censo General de Población y Vivienda*, 1990.

Part Two

EXAMINERS' REPORT

INTRODUCTION

Shortly before joining the OECD, Mexico asked the Organisation to undertake a review of its higher education situation. The reviews of national policies for education carried out by the OECD are highly regarded for the quality of their analysis and the contribution they make to political debate. Several non-member countries which enjoy a special relationship with the Organisation have also asked for such reviews, including several central and eastern European countries and, more recently, Korea.

Two advance visits to Mexico were organised in 1994, enabling the OECD Secretariat and its experts to discuss the nature and scope of the review with the Mexican authorities under the previous Administration (1989-1995). OECD education reviews differ in several respects from the evaluations conducted by other organisations, especially those previously carried out in Mexico. They do not merely analyse the internal workings of the education system and evaluate its quality or effectiveness. Their aim is broader, in that they attempt to identify the extent to which the education system meets the needs of contemporary society and the economy and the extent to which it can contribute to the pursuit of economic development and social progress.

In the case of Mexico, it was clear from the outset that the review could not be limited to the universities alone. Other higher education institutions, such as institutes of technology and teacher training colleges, fell quite naturally within the scope of the review even though they are not attended by as many students as the universities. However, it soon became apparent that it was not possible to conduct a serious analysis of the situation and future of higher education without also considering that part of the system called *educación media superior*, which corresponds in many other countries to post-compulsory secondary education. The content and structure of provision at this level play an important part in explaining the pattern of demand for higher education. As it is also the level at which, in many countries, extensive possibilities for technical and vocational training are to be found, it is important to consider the extent to which these courses are in harmony with higher education courses. Furthermore, in Mexico this level of education has traditionally had a preparatory function, preparing candidates for university

entrance, with many schools even depending directly on higher education institutions. In order to gain a comprehensive picture of the response to social demand and the technical and vocational training provision, as well as to take into account the very structure of the Mexican education system, the scope of the review was extended to include all post-compulsory education, both public and private, though of course higher education remained the focal point. The new Administration (1995-2000) formed after the election of President Zedillo has given its full backing to this approach.

The emphasis of this review has been placed on such institutions' educational rather than research role, the latter having been the subject of a separate OECD study.[1] The higher education sector in Mexico is the product of a long history and has trained an internationally acknowledged intellectual and professional elite. One of the examiners' constant concerns has been to identify how this culture could be extended, especially in the technical area, and become a decisive factor in the country's economic development and in the transformation of Mexican society.

In accordance with the OECD's usual procedure, the Mexican authorities were asked to draft a Background Report which would provide the examiners with a general picture of the situation, of the progress that had been made and of the main issues now facing the political authorities. In this context, the fact that the review was launched just as a new Administration assumed responsibilities could prove to be a particularly fortunate coincidence.

The examiners were:

Rector Claude Pair, former Director, Ministry of National Education
Institut universitaire de formation des maîtres, Nancy, France,
Rapporteur.

Dr. John R. Mallea, Education Faculty,
Professor and Past President, Brandon University,
Brandon (Manitoba), Canada.

Dr. Wolfgang Mönikes, Division Head, Higher Education Division,
Federal Ministry of Education, Science, Research and Technology,
Bonn, Germany.

Mr. Eric Esnault, Directorate for Education, Employment, Labour and Social Affairs, OECD, Paris.

The examiners brought a wide range of skills and experience. They embarked on the review with respect and openness, seeking to find out what others had thought or written about matters that are perhaps more problematical in Mexico than in many other countries. They were also concerned to gather information vital to their assignment and to canvass a broad spectrum of opinions, including from rectors, directors, officials, teachers and researchers, politicians, employers, trade

unions and the students themselves, in order to gain a better understanding of their respective ambitions, fears and hopes.

Two study visits were made in 1995. The first, from 26 June to 7 July, focused mainly on institutions outside the Federal District. The examiners visited Guanajuato, Merida, Oaxaca, Tula-Tepeji, Puebla, Jalapa, Veracruz, Monterrey and Saltillo. This first visit enabled them to formulate initial observations, which they submitted to the Mexican authorities. The second visit took place from 21 to 24 November and was mainly devoted to federal institutions, including the National Autonomous University of Mexico (UNAM), the Autonomous Metropolitan University (UAM) and the National Polytechnic Institute (IPN).

In drafting their report the examiners have attempted to convey how, faced with a complex, tense and difficult situation, they gradually arrived at their conclusions. In Chapter 1 they have sought to explain the context in which the debate on educational reform is taking place. In Chapter 2 they describe the system of post-compulsory education. This description is not a neutral one, since it informs the main thrust of their diagnosis. In Chapter 3 they discuss the issues which they believe to be central to the future. Chapter 4 contains a review of the instruments needed in order to draw up and implement a strategy. The examiners recapitulate their recommendations in Chapter 5 and conclude with a summary of their ideas on the main avenues of a reform they believe to be essential for the future. The reader is reminded that the recommendations, as presented in Chapter 5, are necessarily concise. Their meaning can only be fully understood by reference to the observations and considerations in the preceding chapters which have led to their formulation.

The examiners should like to thank the Mexican authorities, in particular the Under-Secretariat for Higher Education and Research (SESIC) in the Secretariat for Public Education (SEP), for their vital contribution to the review and its practical organisation, for the frankness with which difficult and politically sensitive issues were raised and discussed, and for the very open-minded way in which their remarks and proposals were received. They should also like to extend their warmest thanks to the many people who welcomed them and told them of their work and of their concerns, answering questions with the greatest sincerity and often putting forward extremely interesting suggestions, and to all those who helped them gain a better understanding of the situation and problems, of their hopes and concerns. But most importantly, perhaps, they should like to thank their hosts for helping them to understand, though doubtless imperfectly, and above all to appreciate a country which, though in a difficult situation, has such a rich history, culture, identity and future.

PROLOGUE: CRISIS OR OPPORTUNITY?

MEXICO AS WE SAW IT

We were fortunate in being able to visit not only the Federal District but also a number of states, including not only the more developed and industrialised states in the north and centre of the country but also those to the south, so beautiful but much poorer, if not in resources then at least in industry. Our view is anything but comprehensive, but our travels through the country were enough to give us two prevailing impressions: vastness and variety, whether of countryside, climate and soil or of the population, its needs and activities. These two impressions alone would have sufficed to teach us to be modest with regard to our understanding and show us that there is no single truth in Mexico. Any broad judgement is both difficult and perilous, any general idea or initiative may inspire controversy.

We were also struck by the strength of Mexico's national identity, rooted in a long history and in a blend of three cultures: Meso-American, Hispanic and modern. However, this identity is not without its ambiguities and uncertainties. Many Mexicans wonder whether they are a part of Latin America, or even of the Third World, of which Mexico was one of the leading lights, or of the developed world, the world of North America and the Free Trade Agreement, the world of the OECD. Relations with the United States, Mexico's powerful northern neighbour, have often been difficult and remain ambivalent, characterised by attraction to the American model and its prosperity but wariness of possible domination, especially cultural. Nevertheless, we believe that the Mexican identity and a very strong sense of nationhood will enable the country to assert itself both on the American continent and on the wider international scene.

During our visits we noted the existence of an intellectual and professional elite in a wide variety of activities including politics, the civil service, education, research and enterprises, not only at the highest levels, but also among younger generations of teachers, business and industry executives and, strikingly, students. They represent an exceptional resource for Mexico, of which the fullest possible advantage must be taken. However, outside these elites the level of education and professional qualification remains very modest. The Mexican authorities' Background Report shows that the average duration of schooling is about seven years.

We also got the impression that the middle classes, middle managers and technicians and mid-ranking civil servants do not always have the level of training or competence that one might expect or, on the contrary, do not enjoy the social responsibilities or positions in which their abilities could develop and flourish. This observation guided us throughout our work and we shall return to it.

The scale of social inequalities and regional disparities is an aspect that cannot escape international observers and that many Mexicans regret they have to draw attention to. Of course we noticed them ourselves, though not, as is too often the case, with a critical eye, but with enormous sympathy. We consider these inequalities and disparities to be historical, geographic, political and economic facts that the country and its government have to face. We are also aware that a great deal of work has been done on these issues over a great many years, especially with regard to schooling, but that the task is both arduous and immense. Meeting the needs of the most deprived social categories, of the indigenous populations, of the most difficult regions clearly remains a national priority, but equally clearly there is no easy answer, no short-term solution. Special programmes will have to be combined with more comprehensive measures, especially where the economy is concerned, so that all regions and all social categories are drawn into and given the opportunity to contribute to the transformation of the country. We are aware that Mexico has to face up to the demands of remaining competitive in the industrialised world, of which it is now a member, while at the same time facing enormous development problems.

We were struck by the creativitiy and energy of the people of Mexico, in the face of continuing economic difficulties, not least in terms of individual employment experience and uncertain incomes. Financial analyses and economic diagnoses are often pessimistic, but we were impressed by this vitality, which we have not found in other supposedly more highly developed parts of the world where inertia and lethargy predominate. There is undoubtedly a risk that macroeconomic imbalances will bring all these efforts to naught, but we believe that Mexico's sheer dynamism will ultimately prevail.

Lastly, perhaps because our visits took place during a change of Administration and at the time of a new financial crisis, we got the impression that Mexico was embarking upon a period of profound political change. We recognise that the size and diversity of the country create problems and pressures that are hard to overcome. Moreover, the adjustments and profound changes to economic structures implied by the liberalisation and globalisation of trade have had much more brutal and far-reaching social and political repercussions in Mexico than in other OECD countries. It is hardly surprising, then, that the established order of things is constantly being challenged.

In the political arena also, however, we felt during our travels a change in mentalities, a new sense of responsibility, especially among young people, that was

in sharp contrast with the taste for extremes that has all too often prevailed. We were told about plans to reform the State and the political system. We are aware of how difficult it will be to implement them: there will be political difficulties arising not only from the opposition between different ideological viewpoints but also from diverging interests as power is shared differently; there will be economic difficulties arising from the consequences of the financial crisis; there will be social difficulties arising not only from inequalities and the sheer scale of needs but also from the fact that many social categories are ill-prepared to take part in public life; lastly, there will be difficulties arising from the habit of relying on government action rather than individual and collective initiative.

Thus, we perceive antagonisms and very marked tensions in a country with a long-standing tradition of political activism at the same time as a great openness to the modern world, great willingness, great energy. The future of Mexico will depend on the balance that is struck between the two.

THE ECONOMIC AND SOCIAL SITUATION

Since the 1940s, partly as a result of the centralisation of power, Mexico has been able to embark on vast infrastructure projects while enjoying rapid economic growth at an annual rate of 7 per cent or more and the rapid expansion of its industrial base. This progress enabled Mexico to play a leading role in Latin America and the Third World. However, it was also a protectionist, even isolationist approach, based on the principle of import substitution. The very success of this strategy engendered growing imbalances. The expanding industrial base required capital goods and intermediate goods that had to be imported; at the same time, the population sought to enjoy the benefits of growth, especially in terms of public services and infrastructure. Public debt ballooned, and not even the exploitation of oil reserves was able to offset the deficit. The result was the financial crisis of 1982.

The 1982 crisis made it imperative to radically rethink the very premises of the economic policy that had been pursued until that point with a certain measure of success. The pendulum swung from protectionism to trade liberalisation and the privatisation of a number of public companies. This change had far-reaching repercussions inside the country. A large number of firms proved unable to cope with global competition, either because they were not competitive or profitable enough or because they had not reached the necessary technological level. Investment was shown to be insufficient and infrastructure weaknesses began to appear, especially in communications and equipment, with the result that it was often easier to turn to international firms rather than call on the domestic market. However, Mexicans showed that they were able to overcome the challenges facing them, many of them reacting positively and assuming entirely new positions and attitudes. Growth and international success returned within a few years, thanks also to the country's oil

reserves, the faster pace of privatisation and deregulation and the inflow of foreign capital.

However, this policy was itself put to the test by the financial crisis in 1994. The causes of the new crisis have been the subject of a number of studies, including one by the OECD,[2] carried out by organisations or institutes which, in OECD countries, have taken an interest in how Mexico's economic situation develops. Some of these studies highlight blunders or mistakes of financial management, an overvalued currency or the use of inflows of speculative foreign investment to offset deficits; others emphasise insufficient investment and inadequate infrastructure; still others focus on continuing internal imbalances and disparities.

We do not wish to enter into this debate. We simply note in these analyses certain points of agreement and disagreement with our own observations. The word "disagreement" is perhaps a little strong, but we feel that some studies concentrate more on the financial economy than on the real economy, *i.e.*, on a momentary situation rather than on the potential. Moreover, they are often produced in foreign countries by institutes or organisations that tend to examine the issues from the standpoint of profitability and the safety of investments. Consequently, we wish to maintain a certain distance from them. We agree, however, with certain analyses which point at the deficiencies of Mexico's human capital, which we would prefer to call inadequate mass education and the lack of a technological culture or, in certain circles, an excessive trust in the capacity of the government to resolve alone economic or social problems.

These broad economic considerations give only a very partial impression of Mexico's situation and recent history. We believe factors such as population growth and urbanisation, referred to only briefly in the Background Report, to be equally important. The population has grown at a striking rate, from 51 million in 1970 to 90 million in 1995. It is not difficult to measure what these figures mean in terms of schooling: one fifth of the population is of compulsory school age; 50 million Mexicans are less than 25 years old. And yet, despite the difficulties and disparities we have already noted, enrolment rates have actually risen. Fortunately, population growth has now slowed and the pressure of demand for compulsory schooling is easing, but large numbers of young people are now arriving on the labour market. It is doubtful whether sustained economic growth can give all of them a job in the "formal" sector. It is to be hoped that the "micro-enterprises", which account for perhaps half of all economic activity will be able at least partially to rectify this imbalance and help them enter the mainstream of working and social life.

Foreign visitors immediately struck by the number of children in Mexico are also impressed by the size and population of cities. Urbanisation, especially the concentration of the population in the "metropolitan" area of Mexico City, has been on the same scale as demographic growth. Few cities in the world are as vast and as populous. This gigantism implied a minimum level of infrastructure provision

(housing, water, healthcare, education) for populations with a low level of education whose skills had become worthless in an urban environment. Such internal migrations have exacerbated unemployment and poverty, creating fresh problems for the government and adding tremendous social pressures to the difficulties of economic development and financial crisis.

Tensions are inevitable in a country where the direst poverty rubs shoulders with the most colossal wealth. No political movement can pretend to represent such a diversity of social and personal situations, no initiative, however generous, can meet such a wide range of needs. Under these circumstances, the clamour of claims, conflicts, demonstrations, so characteristic of Mexican politics, of its "revolutionary culture", should come as no surprise. Whether for or against, people expect a great deal of the government, whose resources are of course limited. What we felt to be missing, and should on the contrary be encouraged, is a strong civil society in which there is a better balance between rights, duties and responsibilities. With a few notable exceptions the country has hitherto been led by an elite, or even an oligarchy, which has been able to attract success and prestige. Mexico, now a more developed country, open to the outside world, already in many respects well integrated into the circle of the more advanced nations, needs greater participation in such a civil society. This is particularly true of the middle classes, which have flourished during the periods of expansion and are the driving force behind development, but which are also deeply hit by economic crisis.

However that may be, one major immediate challenge is a return to growth. We are aware that this challenge is all the more difficult to meet in that the pressure of social problems and financial constraints has rarely been so intense, while some of the solutions (overhauling the banking system, repairing the social security system, coping with the arrival of large numbers of young people on the labour market) imply structural adjustments that take time and require careful thought. We are also aware that exports, including non-oil exports, although they have grown considerably, are still insufficient to generate a recovery, which thus depends to a large extent on higher domestic demand, which remains very uncertain. However, the OECD study considers that growth is likely to pick up again in 1996 after the recession of 1995.

As we have said, in 1982 Mexico suffered a major crisis with far-reaching repercussions in all areas. And yet within a few years economic policy had been transformed and growth had returned. Mexico joined the GATT in 1986 and became a member of the OECD and signed the North American Free Trade Agreement in 1994. Nevertheless, a fresh financial storm broke in 1994. Since then, however, albeit thanks to a currency devaluation, exports have risen by 33 per cent in eight months: what other country can boast such results? We thus have confidence in the country's resilience. In reality, our confidence is rooted in deeper impressions, of a change in mentalities, among politicians and academics, in business and in society

as a whole, of the emergence of new values and new attitudes, more constructive and more independent, which suggest that Mexico has reached a turning point in its history.

A MAJOR TURNING POINT?

Like many other observers, we feel that political change is a necessary condition for durable economic recovery and political change. It has been pointed out that economic crises tend to hit Mexico when there is a change of Administration. There is a grain of truth in this remark, as the most recent crisis coincided with the arrival of the current President, and there are reasons to think that the previous government had sought to delay certain effects in order to show a better record. This is not peculiar to Mexico, however. The question now is different: are we seeing a crisis like any other, a mere blip on the economic graph, or has Mexico reached a major turning point?

As we have already seen, the repercussions of the 1982 crisis were felt well beyond the economic sphere, casting doubt on notions and values that had been reinforced by years of success. It is our very clear impression that the events of 1994 will also have far-reaching consequences. New policies had been introduced by the previous Administration, different ideas had begun to take hold among the general public (and in educational circles, a point to which we shall return), a new mood of confidence had emerged, and then within the space of a few weeks a pall seemed to have been cast over the entire enterprise. We can understand why many Mexicans saw the new crisis as a step backwards, to 1982 or even earlier. A large number of newspaper articles asked whether Mexico was a first world or third world country; many wondered what the liberal model had to offer to a developing country and whether a return to earlier political ideas, regarded as more concerned about social protection, might not be in order. Confidence may not have been lost, but it was shaken.

One important political fact is that the social consequences of the crisis, such as currency devaluation, a considerable reduction in purchasing power (already not very high in comparison with the other OECD countries), unemployment, higher interest rates, inability to repay home mortgage and other loans, etc. seemed to affect severely the new middle classes. The middle classes are essential not only to the development of business and the creation of jobs, but also to the possibility of changing the political landscape and introducing greater transparency and more democracy. Our visits and our discussions convinced us that new social categories, though rocked by the crisis and hard hit by recession, are ready to play a greater part in politics and in the economy and that any alleviation of poverty depends on them. This led us to the following remarks.

Political leaders have not lacked for objectives in recent decades, but their policy has mainly been the pursuit of growth, *i.e.*, of quantitative expansion. Growth was founded above all on the exploitation of existing resources, whether natural or human. In manufacturing industry, for example, the aim was to profit from the comparative advantage of low wages, especially in comparison with the American market, and an abundant supply of unskilled labour. The policy was highly successful for a while, but we are beginning to see the emergence of weaknesses that there has been a tendency to paper over: these include infrastructure shortcomings, of course, and the lack of support for the creation of businesses, but also a dearth of skilled workers, all of which mean that the knock-on effects of growth in terms of job creation have been much less than might have been expected. As we shall see, the emphasis in education has likewise been placed on quantitative expansion, giving rise to extraordinary growth rates, but it has not been possible to implement genuine reforms of the existing structure, or promote diversification or real differentiation. Any number of examples could be advanced to show that the challenge of the moment is not only a return to growth but the implementation of fundamental reforms and the creation of institutions consistent with the level that the economy has now reached.

These doubtless figure among the new President's intentions, and clearly they go well beyond the sphere of purely economic concerns. Politically, the aim is to eschew centralisation and strengthen the country's federal structure, a policy referred to as "federalisation". The hegemony of one ruling party is also being abandoned: there are profound differences of view within it; in addition other political hues are now represented among state governors. We welcome this development, not because we have any preference for one party over another, but because we believe that it is essential in a modern democracy for several different approaches to coexist, for pluralism to take root, for a genuine political debate to take place. We also believe, more broadly, that if the current crisis is to be seen as a turning-point and an opportunity, change must go further than merely limited progress in certain areas. We emphasised earlier the need for a "civil society". Encouraging the middle classes, who underpin such a society, is one of the preconditions for the continuity and stability of the State, just as promoting mid-level qualifications is one of the preconditions for a stable economic development, which is not founded on low wages alone, an advantage which would not guarantee Mexico's competitiveness for very long. Education, and technical and vocational training in particular, are the main keys to such change.

Of course, one of the questions we raise in this respect is whether the new government regards education itself as a national priority. We are aware that certain political parties have asserted that this is the case, and the fact that the President is a former education minister may support that view. The level of investment in Mexico, including investment in education, still seems too low, perhaps not in

terms of percentage of GNP, but considering the magnitude of the needs. Another review currently being carried out by the OECD[3] shows that investment in education (and in continuing education for workers) has been a key element in the strategy of a number of countries, such as Japan, whose aim for decades has been to "catch up" with the western world; in this country, almost 100 per cent of each generation now finish a full cycle of secondary education and almost two-thirds go on to post-secondary education. Such levels are doubtless unattainable in Mexico for the time being. However, this demonstrates the need for a searching review of national priorities.

THE EDUCATION DEBATE

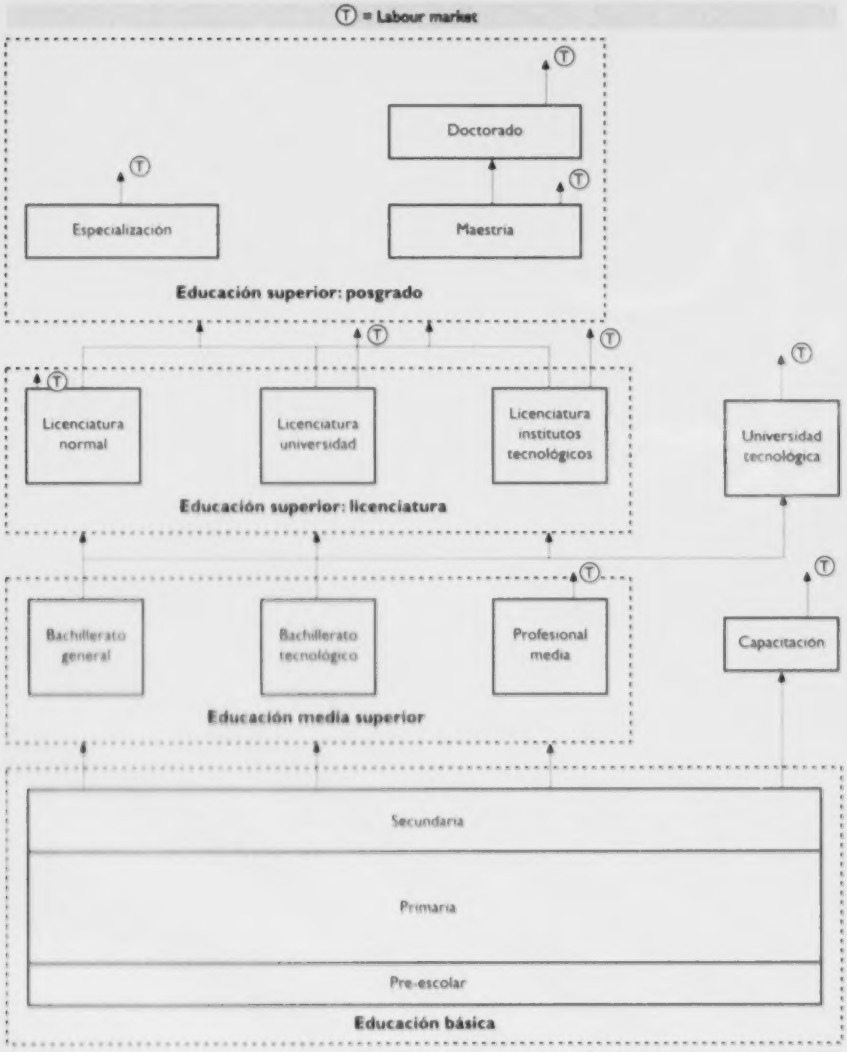
The Mexican education system[4] may be regarded as comprising two separate blocks: basic education (*primaria y secundaria*) and post-compulsory education (*educación media superior y superior*). This pattern is not peculiar to Mexico. Most European systems were designed along the same lines: compulsory education for all, with secondary high school education then preparing an elite for university entrance. This model has changed, however, as enrolment rates have risen and as the needs of the economy and of society as a whole have evolved. We shall come back to this remark, but for the time being, let us merely note that the two blocks are by nature subject to different policies (Figure 1).

Extraordinary growth

Tables 1.1 and 1.2 show the enormous growth of enrolments at all levels of education. Taking 100 as the base for enrolments in 1950, the indices for the education system as a whole were 182 in 1960, 346 in 1970, 635 in 1980 and 700 in 1990. Expansion was much faster than demographic growth. Responding to population growth, meeting the needs of the economy and the ideas of a democratisation of education may have been strong political arguments; nevertheless the effort of the country and its leaders has to be recognized. Mexican people are not always well aware of it. It is hardly surprising that a great effort was made to manage this level of growth within existing structures. However, demographic pressure has now eased: whereas the fertility rate in 1950 was seven children per woman, it has now fallen to just three. In 1950, children under 14 represented almost half the population, compared with one third now. This should be an opportunity to step back and take a more considered look at the general shape of future development.

Basic education does not fall within our terms of reference except inasmuch as it concerns teacher training. Enrolment rates have risen much faster, particularly in secondary schools, than the rate of population growth, even though the latter has been exceptionally rapid (Table 1.2). Considerable efforts have been made over the last twenty years to achieve such results. Many special programmes have been

◆ Figure 1. ***Structure of the national education system***



Source: OECD

Table 1.1 **Enrolments in education by level, 1950-90**

	Primary	Secondary	Upper Secondary	Higher	Total
1950	2 997 054	69 547	37 329	29 892	3 133 822
1960	5 342 092	234 980	106 200	76 269	5 711 372
1970	9 146 460	1 082 177	335 438	271 275	10 835 550
1980	14 666 257	3 033 856	1 265 741	935 789	19 901 643
1990	14 401 588	4 190 190	2 100 520	1 252 027	21 944 325

Sources: Fernando Solana, *Historia de la Educación Pública en México*, SEP, 1981; Alfonso Rangel Guerra, *Systems of Higher Education: Mexico*, International Council for Educational Development, New York, 1978; SEP, *Estadística básica del sistema educativo nacional*, 1990-1991.

Table 1.2 **Comparative growth of enrolments at each level of education and size of corresponding age cohorts**

1950 = 100

		1950	1960	1970	1980	1990
Primary	numbers	100	178	305	489	481
	age cohort	100	154	216	325	355
Secondary	numbers	100	338	1 556	4 362	6 025
	age cohort	100	146	225	327	434
Upper secondary	numbers	100	284	899	3 391	5 627
	age cohort	100	157	242	338	510
Higher	numbers	100	255	908	3 131	4 189
	age cohort	100	189	217	334	486

Sources: Fernando Solana, *Historia de la Educación Pública en México*, SEP, 1981.
Alfonso Rangel Guerra, *Systems of Higher Education: Mexico*, International Council for Educational Development, New York, 1978.
INEGI, *XI Censo general*, 1990.

launched, targeting rural communities, indigenous populations (with bilingual instruction) and isolated villages (with the help of television). These efforts are continuing today in the context of the Agreement on the Modernisation of Basic Education, one of the key features of which is the transfer of responsibility for schools to the states with the aim of encouraging greater local authority and parent participation.

Of course, not all pupils complete their basic education, far from it. Many give up en route. According to the data provided to us, of 100 pupils enrolling in primary education, 62 finish the primary cycle and only 40 complete the full basic education cycle. The government is extremely concerned by the lack of "efficiency" at all levels

of education. At the same time we are well aware of the great cultural discrepancies between the various social categories throughout the country (including in the great northern and central cities). In certain circles, the level of basic education will be regarded as inadequate and public schools may be shunned in favour of private schools. In others, people have perhaps never been to school and demand for education must be generated and strengthened. The advantages of a basic technological culture must be understood, as this would make it easier to promote employment and economic activity.

Upper secondary education (*educación media superior*)[5] is part of the second of the two blocks mentioned earlier. There are a certain number of technical or vocational "terminal" courses, but most of them are intended as a preparation for higher education and a large number of schools in fact belong to universities. Enrolments at this level soared during the 1970s before slowing in the 1980s, with numbers remaining relatively stable between 1988 and 1993. The question is thus how demand will evolve in the years to come, and above all whether it will be for preparatory courses leading to higher education or specifically for post-compulsory training in preparation for work. The issue is central to education policy. Unfortunately we do not have any detailed analysis of the nature of demand, but we think that improved efficiency in basic education will lead to a strong increase in demand for schooling at this level. We also believe that a supply-oriented policy could play a decisive role, a matter to which we shall return.

There was also astronomic growth in higher education, much higher than the rate of population growth. Numbers in higher education rose from around 30 000 in 1950 to 1 200 000 in 1988 and 1 250 000 in 1990, growth mainly taking place in the public sector. The enrolment rate rising from 4.5 per cent to around 15 per cent. Growth at this pace brought new types of students into higher education, while the number of new teachers that had to be recruited as a matter of urgency had the effect of transforming the teaching profession. For all that, however, structures were not really changed and tasks were not redefined. Expansion, though partly attributable to population growth, also to a remarkable increase in female participation, was dictated above all by the prevailing notion in the 1970s that university education should offer the widest possible opportunities for social advancement. This brings us to the political debate about higher education.

The political debate

We were struck by how quickly any debate or initiative affecting higher education turned political. This is not peculiar to Mexico, far from it, and in many other OECD countries the higher education sector has served as a focus for more or less outspoken criticism, resistance and opposition to government policy, although in

Mexico opposition has often taken a violent and, in 1968, even dramatic turn. Several factors seem to have contributed to this process of politicisation.

The National University was created in 1910, before the revolutionary period which culminated in the promulgation of the Mexican Constitution in 1917. The political and intellectual elite at the time was very small, and those who founded the National University and the Mexican State, though not the same, were drawn from within it.

In this regard, Mexican universities cannot be said to have been designed on Napoleonic lines, by the state in the service of the state, which is closer to the model to be found in Japan's old imperial universities. Nor can Mexican universities be said to have shared an identity of interest with the state: diverging viewpoints and political differences soon made relations between them extremely complex, even tense. The complete autonomy of the National Autonomous University of Mexico (UNAM) was recognised from a very early date. The public universities that were created subsequently followed the same model and also enjoy complete autonomy. For these historical reasons and because of the greater political clout they have acquired in the wake of the extraordinary expansion of the 1970s, the autonomy of the universities has become a taboo subject in Mexico. We are not the first to note the extreme construction put upon the term as a refusal of any outside interference, especially by the government, even though the public universities are funded almost exclusively by the public authorities. The first legislative efforts concerning higher education created such ripples in university circles (albeit in the 1970s) that a new amendment was made to the Constitution guaranteeing afresh the autonomy of duly recognised establishments. It is still emphasised in official documents that ministerial priorities are communicated as recommendations or for information only. This is a first indication of the political nature of higher education in Mexico and of relations between the universities and the government.

Another aspect that it is perhaps relevant to mention at this point is the opposition between the "populist" and "modernist" schools of thought. Many commentators have already described the debate,[6] so we shall give only a simplified (and hence perhaps over-simplified) presentation here.

According to the populist approach, the higher education clientele consists not of individuals but of social classes. Proponents of the populist approach seek to gain and wield political power. Consequently, they are in favour of the widest possible access and hostile to the idea of enrolment and tuition fees. Higher education should be in the service of the masses. This view partially inspired the frenetic expansion of the 1970s, a period now described as one of "improvisation". The modernist approach seeks to be more rational and more efficient, especially in the allocation of resources and the match to labour market needs. The modernists are not opposed to enrolment fees and seek partnerships with business and industry, whereas the populists reject all forms of interference.

This opposition is clearly not peculiar to Mexico, as the same ideas on reform can be found in many other countries, but it is doubtless more clear-cut there than elsewhere. The political clout of the large institutions of higher education cannot be measured simply in terms of numbers who can easily be brought out onto the streets. Many graduates are employed in the public sector or in education and represent a power base in politics and the trade union movement. On the other hand, economic development has created new needs in industry and opened up new employment and career prospects, considerably strengthening the modernist tendency. Recent economic difficulties have reinforced this trend, increasing the level of competition for jobs. Overall we feel that in Mexico, as in other countries, the pendulum has now swung towards the modernist camp, even in universities which just a short while ago were the proponents of the opposing tendency. The two approaches are still very much alive, however, since populism in the broadest sense is an integral part of Mexican history, leaving the higher education sector torn between two conflicting ideas and seeking a new identity.

It is instructive to note here that neither of these two ideas focuses on education as such, in the sense of development of the personality and of the critical faculty, or in any cultural sense. Both of them are action-oriented, one towards political and the other towards economic activity, with their different criteria. There is clearly a dearth of fresh ideas, drawing on the differing historical approaches and if possible going beyond them.

The centre and the periphery

There are other dimensions to the political debate, such as the gap between the public and private sectors, the divide between the large public or private institutions and smaller institutions, generally situated outside the Federal District and the large cities, and the relationship between the federal government and higher education institutions. We shall return to these issues, noting merely the following points.

First, the economic and social swing outlined above is at present favourable to the private sector, which some regard as better placed to adapt to changes in individual demand and to the needs of business, and which is already involved in partnerships. Moreover the private sector, although extremely diverse in reality, is concerned with preserving its image of quality and efficiency; this may, by way of contrast, tarnish the image of the public sector, resulting in a loss of confidence in it. Some public institutions have been harshly criticised for their inefficiency and questions have been raised about their viability and relevance, the low standards of which, it was claimed, might deflect demand towards private establishments.[7] Employers, also, have turned away from certain public universities because of the militant attitudes of their graduates. Now, however, some public institutions are

rivalling private ones in their modernism. In all events, we were impressed by the dynamism of some establishments, both public and private, where admissions, assessment, research, etc., are conducted along the lines of, and often in co-operation with, their best foreign equivalents.

Another issue which attracted our attention is the position and role of universities and other institutions situated outside the Federal District and the major industrial cities. The government has made a considerable effort to ensure a better balance between the centre and the periphery. Decentralisation is also one of the new government's priorities. However, "peripheral" institutions are often handicapped by inadequate resources and the relatively low level of candidates or teachers. Moreover, the disproportionate enjoyment of resources, if not to say the hegemony of certain large institutions, makes it more difficult for these smaller and less prestigious universities to develop. With their preparatory classes, the great national institutions (especially the private ones) often attract the best students. Hierarchies of quality and prestige are created as a result, rather than networks and a wider variety of roles and types.

The financial crisis has made relations between the government and institutes of higher education even more tense, because the federal government provides most resources. Whereas the budget grew steadily until 1982, the economic crisis in that year led to a drop of about one third in the resources allocated to public higher education and the difference has hardly been made up since. Teachers' pay was cut by the same amount and many institutions now find that they have no room for manoeuvre and little prospect of growth.

The result of this conjunction of political particularities is that relations between the central government (and more specifically the Secretariat for Public Education) and higher education institutions are extremely complex. For example, we found procedures for obtaining funding from the federal government or from the states to be highly complex, or even, to an extent, opaque. Most institutions negotiate with the SEP, some with the Finance Ministry, two or three with the President's Office.

CRISIS AND OPPORTUNITY

We frequently heard the word "crisis" in Mexico. President Zedillo is reported to have used it more than twenty times in his speech to Congress in September 1995. It is true that Mexico is trying to adapt to a new set of circumstances, conditioned by openness to the outside world, technology, deregulation and market forces, after years of protectionism, nationalised major industries, centralisation and the pre-eminent role of the State. The country has gone from a situation in which everything was expected of the State to one in which everything is hoped of the market, though everyone knows that neither of these two options is ideal. The

traditional social divide between a managing elite and the masses, especially the rural masses, was attenuated as a result of expansion, by the development of intermediate categories. But the effects of liberalisation and globalisation raise the spectre of a different sort of split, between a numerically small, modern society open to the world, and a vast majority hemmed in by the cares of day-to-day living, left to flounder in the wake of economic growth, with the middle classes wondering on which side of the divide they will fall. The transition has been made all the more painful by the growing numbers on the labour market. Mexico today faces the tremendous challenges of securing social peace, political stability, economic recovery and technological development.

Higher education is also in crisis. The crisis is, firstly, one of growth. An increase in numbers such as we can see from Table 1.2, especially between 1960 and 1980, is bound to leave its mark. But growth itself gave higher education different roles from those it had played in the past. Higher education institutions were designed for an elite. Social transformations, the evolving needs of the economy, employment prospects and the enlargement of access called for far-reaching changes in their aims and objectives. We did not notice that any such change had taken place, that is why one can speak about a crisis of identity. This dislocation has of course become apparent to the wider public. From the outside, it may have looked as though the higher education sector was abandoning its requirements of selectivity and quality. People saw that most students dropped out or failed and that graduates were unable to find employment commensurate with the length and difficulty of their studies. This has led inevitably to a crisis of confidence, especially as regards public institutions. This is compounded by a financial crisis which has cut teachers' pay and the resources that would enable them to refresh their methods and continue their research and which has reduced the institutions' room for manœuvre.

And yet it would perhaps be more apposite to talk not of crisis but of a turning-point. Every crisis creates opportunities for change: in Chinese, the terms "crisis" and "opportunity" are based on the same character. Technical measures, though necessary, will not be enough to lead Mexico out of crisis, out of its multiple crises. Free elections and open markets are not sufficient in themselves to build a healthy and democratic society. A market economy may prove to be efficient at producing services and consumer goods but of limited ability in meeting the needs of society as a whole. Citizens cannot expect either the market or the government to assume responsibility for all the collective, vital interests of society and the individual, such as human rights, social welfare and environmental protection. A dawning awareness of civic responsibility is needed, both among individuals and in society as a whole. Three challenges to be faced are these: reducing inequalities and combating the deep poverty that results in exclusion from society; giving the middle classes a

greater say in decision-taking and offering a brighter future to their children; and placing the elite at the service of the greatest number.

In this context, post-compulsory education (*educación superior y media superior*) has a decisive role to play. It will doubtless have to renounce certain forms of social and political power in order to become a player in civil society, and a midwife to its emergence. Educating the middle classes, to drive development and contribute to a decrease in social inequalities, is now one of its main missions. This does not mean that it should no longer train an elite, but that the elite should be at the service of all.

Higher education is not short of qualities to help it accomplish such a task. These qualities include its tradition as custodian of the national identity and the critical cutting edge of society, provided that this tradition does not prevent it from listening to the real needs of society and accepting that it must be accountable for its actions; the role it plays in greater international openness, which must go beyond the purely economic sphere while preserving the cultural heritage; and the considerable effort that the country has devoted to its expansion, which should now enable it to move on towards new goals.

Plainly, if progress is to be achieved, the level of available resources must improve; at the same time, resources must be used more efficiently and, above all, priorities must be more clearly defined. In the following chapters we shall attempt to take our diagnosis further and suggest a certain number of ways in which the post-compulsory education sector in Mexico could contribute to the country's resurgence. We now have to identify the key features of the system as we see it. This is the purpose of Chapter 2.

2

A COMPLEX STRUCTURE

We shall not describe in detail all the elements that make up the post-compulsory education system in Mexico, since such information is contained in the Background Report (Part One). In this chapter, we shall highlight a certain number of features which we found particularly striking and set out the questions we raised with regard to the structure, interconnections, organisation and workings of the system, bearing in mind the demands of Mexican society today as described in Chapter I.

A TANGLE OF SUB-STRUCTURES

The structure of the Mexican education system reflects to a considerable extent the historical circumstances of its development: a basic education system intended for the entire population and a post-compulsory system designed for a much smaller elite, theoretically supposed to pursue their studies through to a first university degree (*licenciatura*), a few continuing with *posgrado* studies. This structure, to which we have already referred, leads naturally to a concentration on two opposing concerns. The first is ensuring that all social categories are given the opportunity to receive a basic education. The second is rather different, since it involves ensuring the availability of a range of high-quality higher education courses and developing areas of excellence in teaching and research so that Mexico can maintain its place in the international community despite the relative slenderness of its resources. The pursuit of these two objectives, this polarisation of interests, may mean that other social expectations are not given the same attention. This question is assuming crucial importance, because those entering post-compulsory cycles are no longer a small elite but may now represent half of each generation. If, as seems likely, the efficiency of basic education is improved, the priority will very soon shift to the intermediate level, the level of upper secondary education, and then to the first years of higher education. This justifies our desire to view the entire post-compulsory cycle as a whole.

We would have had to make this choice anyway, for another reason. The post-compulsory sector is made up of several distinct sub-systems, the three most important of which are, by numerical size, the university sub-system, the

technological sub-system and teacher training (*i.e.*, the training of teachers for the basic education sector), each of which depends on a different under-secretariat at the Secretariat for Public Education (Table 2.1). Many universities have their own upper secondary or preparatory schools (*preparatorias*), as do a number of institutes of the technological sector, the most important being the National Polytechnic Institute; and although teacher training colleges have been a part of the higher education system since 1984, some teacher training has been carried out at upper secondary level for a long time. The administrative structure is thus essentially vertical. To this basic structure are added other institutions, at either upper secondary or higher level. Some of them are relatively recent and are attended by growing numbers of students; some of them depend on ministries other than the Education Ministry. The total number of higher education institutions is large: there are 748 that award the *licenciatura* (see statistical annex of the Background Report, Table 11).

The system can also be differentiated according to legal status. An initial distinction may be made between the public and the private sector. Private universities represent about 17 per cent of students (1993, ANUIES), the two largest having just over 15 000 students. The private sector plays a more important role in the technological and teacher training sectors, representing around one quarter of total numbers. The largest and most prestigious institution is the Technological Institute of Monterrey (ITESM), with over 35 000 students at higher education level and a network of preparatory schools throughout the country. The SEP is responsible for authorising private institutions, though it gives no guarantee as to quality.

Among public institutions, a distinction may be made between those that depend on federal authorities, those that depend on state authorities and those that are autonomous. In a nutshell, the federal authorities are responsible, in a variety of ways ranging from centralised control through deconcentration to decentralisation, for most technological education and for general upper secondary schools not affiliated to universities, such as the *Colegios de Bachilleres*. The

Table 2.1 **Higher education enrolments per sub-system, 1991-92**

	Licenciatura	%	*Posgrado*	%
Universities	876 199	71	33 122	70
Institutes of technology	183 328	15	3 872	8
Teacher training	105 662	9	1 368	3
Other	67 278	5	9 177	19
Total	**1 232 467**	**100**	**47 539**	**100**

Source: *Datos básicos de la educación media superior*, 1993.

Table 2.2 **Enrolments in upper secondary and higher education by authority responsible, 1992-93**

Percentage

	Federal	States	Autonomous	Private
Upper secondary	37	22	18	23
Higher	17	13	49	21

Source: *Datos básicos de la educación media superior*, 1993.

universities, in contrast, enjoy the most complete autonomy, including with regard to their affiliated high schools. State authorities now play an essential part in basic education, as part of the federalisation policy, but their role in post-compulsory education is still limited. Some teacher training colleges depend on the states, others continue to depend on the federal authorities (Table 2.2).

A further important distinction needs to be made between the great "national" institutions and the rest of the system. These great national institutions, mostly located within the Mexico City area, are the National Autonomous University of Mexico (UNAM, 275 000 students including 150 000 in higher education), the National Polytechnic Institute (IPN, 103 000 students including 56 000 in higher education) and the Autonomous Metropolitan University (UAM, 41 000 students, all in higher education). It could be argued that this distinction is over-simplified, because other great universities exist, in Guadalajara, Veracruz, Puebla and Nuevo León, for example, with more students than the UAM (not including those in upper secondary education, which at Guadalajara represent over half the total number). Although these universities were modelled along the lines of the UNAM, they now have their own character and the same could be said of many others. However, the question of what is sometimes perceived as the dominance of the UNAM and IPN remains.

This brief description is enough to show that this is neither an upper secondary education system nor a higher education system nor a single, all-embracing system. On the contrary, this matrix of distinctions creates a situation that is highly complex, or rather highly complicated and fragmented, rendering any management of the whole extremely problematical. This complication has its roots in the past and is the result of a series of public and private initiatives, demonstrating all too clearly that, faced with the impossibility of changing what was already there, the preferred solution has been to create something new each time.

One of the reasons for this is the very broad construction put on the autonomy of the universities, making it difficult to introduce change. Thus, the IPN was created as a counterweight to the "classical liberal" tradition associated with the

UNAM, the essence of which would not have been to meet the needs of the world of work. The IPN does not formally enjoy independence. A few years after its creation, however, as its centralised nature did not make it possible to meet the needs of the country as a whole, institutes of technology were created in the various states, though they were regulated centrally. More recently, the process of federalisation has made it desirable for the states to be able to participate in technological higher education. This was achieved not by placing existing institutes under their authority but by creating a new type of institution. Moreover, as the institutes of technology did not provide the short-cycle technical courses required to train the advanced technicians for which the country was beginning to feel a need, yet another category of institutions was created: the technological universities. Other examples could be cited, such as the UAM, created in 1974 in order to provide a different organisational model from the UNAM, which had inspired the other universities hitherto.

The currently accelerating pace of change calls for the implementation of comprehensive strategies, which is made problematic in a situation of such complexity. We believe that a shift should be made towards a system of upper secondary education having its own set of aims and objectives and its own character, and a less complicated but genuinely diversified system of higher education, so that it is possible to obtain a comprehensive overview of the whole picture, define priorities and ensure continuity and complementarity. We shall examine these two levels in turn.

UPPER SECONDARY EDUCATION

The range of courses

As in many other countries, there are three main avenues at this level of education: general pre-university education; technological education, called *bivalente* because it leads to a vocational qualification as a technician but also gives access to higher education; and vocational training with the aim of gaining direct access to the labour market.

General pre-university education

There are several types of school providing general education leading to the baccalaureate (*bachillerato*). An initial distinction may be made according to the authority on which they depend. Among public high schools, a distinction may be made between those affiliated to universities, those that depend directly on the federal authorities and those that depend on state authorities. There is also a private sector in which comparable distinctions are to be found, depending on whether the schools are approved (*incorporadas*) by the universities, the federal authorities or state authorities.

University-affiliated high schools are a particular feature of the Mexican system that has often struck international observers.[8] They have a long history: the *Escuela Nacional Preparatoria* was created in 1867, before the National University, founded in 1910 (as the Mexicans say, the daughter gave birth to the mother). Any pupil wishing to enter higher education had to complete this preparatory cycle, which was an integral part of the university.

UNAM now has several schools of this type. There are two sorts: nine "National Preparatory Schools" (ENP) and five "Colleges of Sciences and Humanities" (CCH), created much more recently (1971). These two cycles are designed exclusively as a preparation for university entrance. They last three years and in both cases options are available in the third year. In the preparatory schools, the curriculum is relatively broad and covers a number of subjects; in the colleges it focuses on subjects intended to provide the fundamentals of knowledge and working methods. In the preparatory schools the choice of options determines the student's university path, whereas at the colleges the choice is entirely free and does not determine future orientation. We feel that both approaches have something to offer, though the preparatory schools, having been in existence for longer, attract more pupils. Many other public and private universities have followed the UNAM's example and now have their own affiliated high schools.

The number of pupils in schools affiliated to or approved by universities represent around half the total numbers in general upper secondary education (Table 2.3), though this proportion has fallen significantly over a relatively short period. This is due partly to a decline in numbers at high schools affiliated to public universities, but mostly to an increase in numbers at schools not affiliated to universities, especially private schools, where growth levels have been particularly high (almost 50 per cent in five years).

The most important type of school that is not part of the university network is the *Colegio de Bachilleres*, of which there are 450 nationwide. There are other types of school that depend on federal or state authorities. The same three categories are

Table 2.3. **Proportion of pupils in upper secondary education in high schools affiliated to or recognised by universities**

Percentage

	1988	1990	1992	1993
Public	57.3	54.7	48.9	46.6
Private	69.8	63.6	64.3	63.0
Total	**60.5**	**57.2**	**53.2**	**51.2**

Source: Datos básicos de la educación media superior, 1993.

also to be found in the private sector, depending on whether the schools concerned are recognised as meeting the necessary criteria for *Colegio de Bachilleres* or approved by federal or state authorities. A cycle generally lasts three years, though some private schools claim to prepare candidates for the *bachillerato* in a few months.

Technological education

Centres offering technical and vocational training, parallel to high schools and universities, have a long history in Mexico. Vocational schools at all levels and offering all types of specialisation flourished during the second half of the nineteenth century and in the early part of this century. As in many other countries, they were of very different origins. In the early 1930s, in the face of such variety, it was considered necessary to group together most of the schools that were under federal authority. This initiative led to the creation of the National Polytechnic Institute (IPN) in 1936. It originally included one level of elementary vocational training (*prevocacional*), one level of more advanced vocational training (*vocacional*), one level of higher technical studies, and specific programmes for workers and women. Just as the National Preparatory School predated the National University, a Technical Preparatory School was set up in 1932 before the IPN.

The IPN now occupies an important position in the technological education system, but other federal institutions have been created to meet the new needs arising out of industrialisation and development. A fresh attempt at integration led to the introduction of the National System of Technological Education in 1976. The system manages curricula containing several levels of training but is not the only player in this field (Table 2.4).

Table 2.4 **Position of the National System of Technological Education in all technical and vocational training**[1]

Percentage

	Federal		States	Independent	Private
	NSTE	Other			
Elementary vocational	23.8	1.8	—— 9.7[2] ——		64.7
Vocational	52.3	0.6	7.6	8.3	31.2
Technological	23.0	9.4	23.5	21.5	22.6

1. At the level immediately following compulsory schooling (higher technological education being thus excluded).
2. Independent centres or centres depending on state authorities.

Source: *Sistema nacional de educación tecnológica*, SEP, Mexico, 1992.

Courses leading to technological *bachilleratos* are called "*bivalentes*" because, as in other countries, especially in Europe, they award a technician's qualification, recognised on the labour market, and a diploma giving access to higher education. The same feature as in general education is to be found in this sector, in the form of schools affiliated to institutes of technological higher education. Thus, the National Polytechnic Institute has 15 *Centros de Estudios Científicos y Tecnológicos* (CECYT, Centers for Scientific and Technological Studies). Approximately one quarter of the total number of high school pupils preparing a general or technological *bachillerato* are enrolled in this type of course (Table 2.5).

Table 2.5. **Courses leading to a technological *bachillerato* as a proportion of all *bachillerato* courses**

Percentage

	1988	1990	1992	1993
Public	30.5	30.3	31.9	33.3
Private	7.7	5.8	7.6	7.6
Total	**25.8**	**24.8**	**26.5**	**27.7**

Source: *Datos básicos de la educación media superior*, 1993.

Vocational training

At the same time as bivalent courses leading to a technological *bachillerato*, there are also "terminal" vocational courses within the upper secondary education system which do not give access to higher education. However, they are not the only vocational training courses to be taken into consideration if we are to gain an overall picture of the different types of course available. There is a lower level of vocational training, the *capacitación formal para el trabajo*.

Elementary vocational training (capacitación formal para el trabajo)

In order to have access to elementary vocational training, pupils must demonstrate a sufficient level of knowledge, which sometime corresponds to the level attained on completion of basic education. This type of course tends to attract young people who, even if they have not completed their basic education, are often of a comparable age to pupils in upper secondary education. Courses are relatively short, ranging from 40 to 540 hours, the average being 240 hours. Depending on the level of the pupil, it takes three to ten months in theory to obtain a vocational

qualification. In 1990, the numbers enrolled in these courses were very similar to those in "terminal" vocational training (413 587 compared with 413 540).[9]

Upper secondary vocational training (educación profesional terminal)

Upper secondary vocational training covers a range of courses which, as the name suggests, are more theoretical and more highly structured. It is the sector in which the federal authorities play the greatest role (see Table 2.4). These courses also last three years but do not give access to higher education. The main constituents of the sector are the *Colegio Nacional de Educación Profesional Técnica* (CONALEP, National College for Vocational and Technical Education), a decentralised federal institution set up in 1978 that manages 248 schools, and the *Centros de Estudios Técnologicos Industriales y de Servicios* (CETIS, Centres for Industrial Technology Studies and Services). There has been a slight growth in numbers enrolled in CONALEP programmes, though within a broader context of slight decline in overall numbers in the sector.

Numbers

We have described the main components of the upper secondary education system and taken a brief look at elementary vocational training. We now propose to show how the numbers of those enrolled in such courses break down between them.

Breakdown

Table 2.6 contains a breakdown between the three main streams of upper secondary education, making a distinction between university-affiliated and non-affiliated high schools (it has not been possible to make the same distinction for the technological *bachillerato*). Table 2.7 shows how this breakdown has evolved and includes some data on elementary vocational training.

These tables, which cover only a short period, show first of all that the share of general education has remained relatively unchanged. As noted earlier, the decline in numbers attending university-affiliated high schools has been offset by the rise in numbers attending non-affiliated schools. Likewise, in the technological/vocational group, the rising share of technological education has offset the decline in vocational training. Numbers in elementary vocational training have also fallen.

These trends are partly determined by supply: the rise in the proportion of pupils taking general education courses in non-affiliated high schools (34 per cent) corresponds to the increase in the number of such schools (36 per cent). However, these trends can also be explained by a shift in demand: the number of pupils preparing technological *bachilleratos* has risen a little faster than the number of

Table 2.6 **Breakdown of numbers between the main streams of upper secondary education**

Percentage

	1988	1990	1992	1993
General education	58.5	60.3	59.3	58.7
– affiliated	35.4	34.5	31.6	30.0
– non-affiliated	23.1	25.8	27.8	28.7
Technological education	20.3	19.9	21.4	22.5
Vocational training	21.2	19.8	19.2	18.8

Source: *Datos básicos de la educación media superior*, 1993.

Table 2.7 **Trends in numbers in the various streams of upper secondary education (1988 = 100) and elementary vocational training (1990 = 100)**

	1988	1989	1990	1991	1992	1993
General education	100	105	107	110	108	109
– affiliated	100	103	99	98	95	92
– non-affiliated	100	107	116	122	128	134
Technological education	100	100	101	120	112	120
Vocational training	100	103	97	89	96	96
Total upper secondary	100	103	104	104	106	108
Elementary vocational	–	–	100	99	97	94

Source: *Datos básicos de la educación media superior*, 1993.
Sistema nacional de educación tecnológica, SEP, 1993.

schools (20 per cent compared to 13 per cent). However, numbers in terminal vocational training are falling although the number of schools has risen (–4 per cent compared to +9 per cent). This confirms that vocational training has become less attractive.

Few leavers with technical and vocational qualifications

Following the widespread practice of grouping vocational and technological education in order to compare numbers with those in general education, it is apparent that enrolments in technological and vocational streams in upper secondary education (42 per cent) are relatively low compared with many other OECD countries (Table 2.8). Moreover, for Mexico we had to refer to the number of new enrolments rather than the enrolment rate at age 17: taking dropouts into account, this percentage is doubtless overstated, though it is true that elementary vocational training has not been taken into account in this table.

Table 2.8 **Percentages of pupils in technological and vocational education[1] in Mexico and in some other OECD countries, 1992**

	General education	Technological and vocational education
Mexico	59	42
United Kingdom	80	20
Australia	72	28
France	46	54
Italy	30	71
Sweden	27	74
Germany[2]	20	80
Austria	24	77
Switzerland	25	75

1. At the level immediately following compulsory schooling.
2. In the former Federal Republic.

Source: *Datos básicos de la educación media superior*, 1993. Other countries: *Education at a Glance*, OECD, 1993.

It is instructive to reformulate the table using figures as a proportion of an age cohort (Table 2.9). Although calculation methods are not always comparable, they suffice to give orders of magnitude. These figures show firstly that Mexico is still at a relatively low level in terms of total enrolments at this level of education, despite the extraordinary growth of which we have spoken. The figures also make it possible to situate Mexico better among the three groups of countries we have identified according to whether vocational training primarily takes place on the job, in schools or under apprenticeship schemes.[10] Despite the relatively low value of percentages in technological education, Mexico is closer to the group of countries where mid-level vocational training is provided in schools, which also corresponds to the structure and overall approach of its initial education system.

In interpreting these data, however, we must (for all countries) consider the real nature and function of what we have called technological education, referred to in Mexico as "bivalent" courses. In France, for example, such courses have become a preparation for further studies, generally leading in two years to an advanced technician's diploma; the trend in Italy is doubtless similar, although the technician's diploma has retained its value on the labour market. In Mexico, although there do not appear to be any statistics on the destination of those graduating from technological education, we were told that at least nine out of ten go on to pursue higher studies. Thus, very few leave the system on completing their

Table 2.9 **Percentage of pupils in general or technological and vocational education[1] in Mexico and in some other OECD countries, as a proportion of an age cohort, 1992**

	General education	Technological and vocational education	Total
Mexico	25	28	46
(incl. *capacitación*)		35	60
United Kingdom	34	9	43
Australia	42	17	59
France	40	47	86
Italy	20	50	70
Sweden	23	63	85
Germany[2]	19	73	92
Austria	16	69	86
Switzerland	21	64	85

1. At the level immediately following compulsory schooling.
2. In the former Federal Republic.

Source: Mexico: *Datos básicos de la educación media superior*, 1993, on the basis of new enrolments compared with the estimated size of a cohort aged 15. The method leads to a certain overestimation as the dropout rate is very high, especially in vocational training.
Other countries: *Education at a Glance*, OECD, 1993, on the basis of enrolment rates at age 17, except for Italy: 27° *Relazione sulla situazione sociale del paese*, CENSIS, 1993.

course in order to become technicians. The courses are "bivalent" on paper only and few students leave the system with qualifications after three years of study. The advantage of this bivalency is to provide an acknowledged qualification in the frequent event of dropout from higher education courses, but this is tantamount to exit by failure.

Why is vocational training in general, and terminal vocational training in particular, so unattractive? We have seen (Table 2.7) that numbers are declining, although the CONALEP programme seems to be withstanding erosion rather more successfully. It is true that, given a choice between a technological *bachillerato* giving access to higher education and a terminal course of the same length, preference is likely to be given to the former. Moreover, the dropout rate in the vocational stream is extremely high. This suggests either that the final diploma is not sufficiently highly regarded by society as a whole and does not enjoy enough esteem on the labour market or that it is not considered an attainable objective by those for whom it is at present intended.

We have read and heard very different judgements of these upper secondary vocational training courses, including those in the CONALEP programme. Some consider that they are valid options and that employment and salary prospects are satisfactory (though we had no access to corresponding surveys or information

about their methodology). Others criticised the quality of the courses and the lack of contact with industry and doubted the value of such diplomas on the labour market. We were sorry not to have been able to shed more light on this question, so vital for the future of the training system.

Likewise, the number of young people entering elementary vocational training is low and falling. We were unfortunately not able to visit any schools specialising in such courses, but our impression was that they are not particularly attractive to young people and not held in sufficient esteem by employers who seem, for the time being, to be seeking to utilise the comparative advantage of low wages or relying on the system's selective role rather than building up a structure of qualifications.

In short, the proportion of young people leaving the system at an intermediate level with a technical or vocational qualification is very low. We shall come back to this point.

Pathways through the system

Access to upper secondary education

There is no examination or national criterion for access to upper secondary education. However, there are links between secondary schools (*educación secundaria*) and high schools: to a certain extent, future pathways are decided upstream. Depending on demand, university-affiliated high schools may make a selection on entry. As the universities are independent, they can choose whichever method they prefer for their affiliated high schools: testing, interviews, past achievement, etc. This variety of criteria and methods is clearly a source of unfairness.

Of those leaving secondary school in 1984, 64 per cent were admitted into general or technological education and 17 per cent into vocational training, giving an overall rate in excess of 80 per cent. In 1992, the proportion was more or less the same. This proportion may appear satisfactory, but we identified three areas of concern. First, we do not know how many candidates fail. Second, demand for the most prestigious pathways is high (in preparatory classes for UNAM, less than one candidate in four was accepted in 1995), but most of them (with the exception of preparatory courses for the Monterrey Institute) are located in the Federal District. Competition can thus ensure a certain degree of fairness within the District, but access is extremely difficult for those who do not live there, a point confirmed by many students. Third, the quality of public secondary schools seems genuinely to be very uneven, with the result that access for many young people is precluded, or at least handicapped, from the outset. Here again, we fear that outlying regions are often at a disadvantage.

Effectiveness and efficiency

Efficiency is a constant preoccupation of education officials in Mexico. Every written document relating to education, including the President's annual report, mentions the "terminal" effectiveness/efficiency of each type of education and the high dropout rate.[11]

We should first place this notion of efficiency in context. In a country where, because of the difficulties we have already mentioned, one quarter of the population of school age fails to attend primary school and where less than half that population completes the basic education cycle, any additional year in school is a formative experience for the young people concerned and represents a step forward. It could also be pointed out that if such an additional year were the last year of a cycle, it would be judged positively according to the adopted criteria of terminal efficiency, whereas if it were the first year of the following cycle it would be judged negatively.

This argument becomes less persuasive, however, the further up the educational ladder one goes. The dropout rate in cycles leading to the general or technological *bachillerato* was one third in 1987, in some UNAM-affiliated high schools it is as high as one half, despite highly selective entry. The dropout rate in terminal vocational training was 60 per cent in 1987. This might be partly due to the fact that these courses are not regarded as especially attractive, but in all events it is an important contributing factor to the low numbers of young people leaving the system with a qualification.

Access to higher education

Many observers have been shocked to find that pupils in university-affiliated high schools, if they complete their studies and obtain good enough grades, do not have to sit a university entrance exam. This is what is called the *pase automático* or *pase reglamentado*. In our opinion, this is missing the point: the universities, being themselves responsible for the content and quality of their preparatory classes, see no reason for introducing an exam (although such an exam did exist until the 1960s). Moreover, in many countries, such as France and Italy, the *bachillerato* gives entitlement to a university place. The point is that pupils in university-affiliated high schools do not have to sit an entrance exam, whereas those from other streams (such as federal colleges) do. Even though there are universities without preparatory classes, this may be seen as a source of inequality.[12]

Universities decide the form of their own entrance examinations: they may add other criteria, scholastic achievement records, psychological tests, etc.; they may use academic aptitude tests such as those of the US College Entrance Examination Board or those offered by the CENEVAL, a body set up recently in Mexico which we shall look at in greater detail later. The whole purpose of the admissions procedure

is to establish a ranking by faculty or area of study. Admission is thus not a right; it depends on the number of available places.

Pupils may apply to several institutions; those who are not accepted by the university or faculty of their choice may be admitted elsewhere, and for that reason an effort has been made to harmonise exam dates. They may also sit the exam several times and a February session is sometimes organised for those who did not pass in September. The overall transfer (pass) rate in 1988 was 70 per cent.

What concerns us is not therefore the *pase automático* in itself but the lack of any common rules or identical criteria for admission into higher education. The students we interviewed commented on how difficult it was for those who, for whatever reason, had not been to the right school or followed the right path to get into the faculty of their choice (and those we talked to were the ones who had succeeded).

As it is not possible to admit all candidates, for reasons of both academic attainment and available resources, it is a matter of elementary justice that the selective admission procedure should be the same for all. This procedure, which should be based on an exam and on scholastic achievement in upper secondary education, must at the same time make it possible to control entry flows into the various streams flexibly, according to the quality of candidates and an assessment of employment opportunities. Given the variety of institutions, we do not feel that we can recommend a national exam; however, as admissions procedures require a considerable amount of organisation, we recommend that institutions should group together in order to implement them.

Long-standing hierarchies

Even though our description of upper secondary education has been somewhat simplified, the system is clearly heterogeneous: in fact, there are reported to be over 300 programmes. Inevitably, perhaps, hierarchies have formed within this range of cycles and schools, between those that are affiliated to a university or the IPN (National Polytechnic Institute) and those that are not, between those that are approved by the federal authorities and those that are not, between those in the private sector and those in the public sector. The same phenomenon exists in all countries, but the situation in Mexico is particularly complicated. The question is this: how great is the quality differential and what are the implications for equality of opportunity?

It is difficult for us to make a judgement as to quality. Our impression is that there is good and not so good in each category. This is particularly true of private schools. They often have a better reputation than the public sector, except perhaps in the sciences, but there are some where the lack of quality is flagrant.

One aspect stands out quite clearly: some choices are more attractive than others. This is closely linked to the prospects they offer at the higher level and "automatic transfer" (*pase automático*) is a factor here. Demand is strongest for the high schools affiliated to great institutions such as UNAM, IPN and the Monterrey Institute of Technology; terminal vocational training courses are much less sought after. In fact, the upper secondary education system is the result of a series of initiatives which have created an extraordinarily disparate and fragmented structure. The system was able to function as long as it catered for only a small proportion of the population and focused almost exclusively on entry into higher education. Some of these courses doubtless continue to give satisfaction on their own terms, but if access is to be extended and serious functional problems avoided, we believe that far-reaching structural changes will have to be made.

HIGHER EDUCATION

Growth

The higher education sector has grown extremely rapidly. From 30 000 in 1950, the number of students in higher education increased three and a half times between 1960 and 1970 and by as much again between 1970 and 1980. The growth rate slowed a little during the 1980s but was still around 50 per cent between 1980 and 1993. There are now over 1 300 000 students in higher education, 42 times as many as in 1960 (Table 1.2 in Chapter 1).

This expansion has been much more rapid than the rate of demographic growth: numbers in the corresponding age cohort having increased less than five-fold between 1950 and 1990. As we noted earlier, it was facilitated by economic growth but was based above all on social demand and the idea of democratising higher education. The growth rate has slowed in recent years, slipping below the rate of population growth, partly for financial reasons but also because of an obvious need to consolidate after a period of such rapid expansion.

Growth is continuing, however, and we believe that this trend is partly due to the decentralisation policy being carried out by the Secretariat for Public Education. In 1970, almost half of all students in higher education were in the Federal District; now, this proportion has fallen to a little less than one quarter. This corresponds roughly to the distribution of the population. This level of decentralisation, achieved in a relatively short space of time, should be applauded (Table 2.10).

Another important feature is the growing share of the private sector. Over the period 1986-1991, public education (excluding teacher training) expanded by 9 per cent, while private education expanded by 40 per cent. This difference is large enough to merit attention. According to the Background Report provided by the Mexican authorities, the public and private sectors are more or less equally efficient. From what we have heard, it would appear that private institutions have

Table 2.10. **Numbers of *licenciatura*[1] in the Federal District compared with the rest of the country, 1970-93**

	Federal District	Rest of the country
1970	53.2	46.8
1980	31.2	68.8
1985	24.6	75.4
1990	23.4	76.6
1993	22.7	77.3

1. Does not include teacher training colleges.
Source: SEP/SESIC, *Dirección General de Educación Superior*.

adapted more rapidly to demand from the world of business and industry (which is to a large extent distinct from demand from the professions), but also the reputation of public education has been harmed by the increase in numbers, and sometimes even by an ideological slant. It is not for us to take sides in this debate and we recognise that the great public universities still enjoy considerable esteem, especially in the sciences. However, we believe that it is necessary to try and take account of this situation, by encouraging the public and private sectors to join forces in pursuit of the same policy.

Organisation of courses and institutions

In most cases, students follow the same path whatever the type of institution: as soon as they enter higher education they set out on a career track, the *carrera*, which they follow, semester by semester (or sometimes term by term) until the *licenciatura*, the first university diploma. There are few choices or options available to them, no steering or guidance and no possibility of leaving with an intermediate diploma. If they drop out, as is the case for almost half of them, they have no recognized qualification that they can use on the labour market, and as a rule their studies do not give them credits if they wish to switch courses or enter another institution. Courses are not easily comparable, and equivalence procedures between institutions are long and complicated; students have to suspend their studies while waiting for a decision and generally have to backtrack to an earlier point when (and if) they resume them.

Courses in the first cycle of higher education last at least four years, generally five and sometimes more. In practice, with repeats and changes of orientation, studies often take longer – there are no statistics on the average length of *licenciatura* studies. Moreover, an additional test is required in order to obtain the diploma, such as a dissertation or thesis, which may take more than a year to complete. Weekly timetables also differ considerably from one type of course to

another; in technological subjects, for example, we were told that they could reach as much as 35 hours a week.

Teachers are often assigned to a single stream, teaching classes of a few dozen students. They enjoy considerable academic freedom, the *libertad de catedra* mentioned in Article 3, paragraph VII of the Constitution.

Institutions are generally organised into units called faculties or schools (in theory depending on whether or not the unit offers post-graduate courses), each containing a certain number of streams. Research is often organised in entirely separate structures, called institutes or centres. A full-time teacher may not as a rule belong to an institute, nor may a researcher belong to a school or faculty. Larger units exist at the UAM, however, where teachers are grouped by discipline into teaching and research departments; this model has been followed in some other universities. At the IPN, too, the separation between teaching and research is less strict.

Licenciatura studies

In order to describe the breakdown of numbers by area of study, the Background Report used the career groupings of the ANUIES (which for practical reasons we have reproduced here as Table 2.11). To understand this table, one should note that the number of students increased from 935 000 to over 1 300 000 between 1980 and 1994, and in 1984 teacher training became a university-level course leading to a *licenciatura*. The proportion of students studying agriculture and medicine fell by more than 19 points over the period, perhaps reflecting career bottlenecks as a result of increasing numbers, but the proportion taking technological courses increased by only 3 points, which is low, while the proportion studying sciences fell by half. However, there was a significant 8-point rise in the proportion studying "social and administrative sciences". This category alone accounts for over 45 per cent of total numbers.

Table 2.11 **Numbers by area of study, 1980 and 1994**

In absolute terms and as a percentage

Area of study	1980	%	1994	%
Agriculture	66 571	9	34 160	3
Health	15 742	22	113 183	9
Exact and natural sciences	22 905	3	22 464	2
Social and administrative sciences	27 249	37	591 415	45
Education and Humanities	19 991	3	157 004	12
Technology	192 233	26	385 921	30

Source: ANUIES, 1980, 1994.

For our part, we shall employ a grouping of disciplines and areas of study that has already been used for the purposes of international comparison.[13] In this presentation, we have grouped science and technology,[14] the health professions, law with economics and business, and education and humanities with the "other" social sciences (Table 2.12). Mexico does not compare badly with other OECD countries (Table 2.13) in terms of numbers in science and technology, ranking behind Germany, Finland, the Czech Republic and Hungary but at a level comparable to many other advanced countries. By contrast Mexico is among the leaders, along with Belgium and the Netherlands, and well ahead of the other countries, for law, economics and business.

However, the previous observation should be qualified for two reasons. The first is that most other OECD countries have a non-university sector offering shorter courses with a more practical and vocational slant. If we were to take this factor into account, Mexico's position would be much less favourable from the standpoint of technical and vocational qualifications. The second relates to enrolment rates in higher education: in general, the higher the enrolment rate, the lower the relative weight of technical and scientific disciplines. This leads us to conclude that the weight of scientific and technical courses is low for Mexico's current level of

Table 2.12. **Higher education: new enrolments, numbers and exits by main areas of study, 1992**[1]

	Entries		Numbers		Exits[2]	
	abs. val.	%	abs. val.	%	abs. val.	%
Sciences	5 316		22 240		2 752	
Technology[3]	94 427		406 882		46 523	
Total	99 743	33	429 122	34	49 275	26
Social sciences	17 031		78 386		12 550	
Humanities	4 323		15 201		1 645	
Education	44 691		140 228		43 879[4]	
Total	66 045	22	233 815	19	60 624	32
Law	23 572		218 083		15 913	
Business	87 236		370 047		49 716	
Total	110 807	37	488 430	39	65 629	34
Health	24 862	8	110 411	9	14 946	8
Total	**301 457**	**100**	**1 261 778**	**100**	**190 474**	**100**

1. Classification used in *From Higher Education to Employment*, OECD, 1993.
2. *Egresados*.
3. Including agricultural engineers.
4. For teaching training colleges, number of fourth year students.

Sources: *Anuario Estadístico 1993*, SEP/ANUIES;
Estadística básica del sistema educativo nacional, 1993-94, SEP.

Table 2.13 **Scientific and technical diplomas as a proportion of all university diplomas in some OECD countries**

Percentage

	1991	1992
Canada	16	16
United States	15	16
Australia	19	19
Japan	26	25
Denmark	26	21
Germany	32	33
Italy	17	17
Netherlands	22	21
Spain	16	17
United Kingdom	26	29
Sweden	26	27
Norway	17	27
Switzerland	25	24
Hungary	51	18
Czech Republic	55	46

Source: Education at a Glance, 1994-1995, OECD.

economic development. This does not mean, however, that the number of students in corresponding streams must necessarily be increased without taking a close look at the employment situation.

By contrast, the proportion of students studying law, economics and business seems high. In many countries, this sector grew strongly during the 1980s, partly because financial services and business were areas of employment creation and partly because demographic factors were restricting career prospects in teaching. Demand thus shifted from one sector of higher education to another. We believe that in Mexico this growth simply made it possible to absorb most of the increase in numbers. It is to be feared that graduates already obtain only relatively lowly positions from which it will be difficult for them to move. It is thus by no means certain that the intensity of demand for courses in areas such as administration, accountancy and business is the result of a truly economic choice: this is "floating" demand, targeting areas other than the "hard" disciplines of science, technology and medicine. It is another reason for supposing that successive governments were right in seeking to redress the balance in favour of science and technology.

However, it is not enough merely to refer to statistics. Account must also be taken of how subjects are taught, of the balance between theory and practice, of work experience in enterprises. If courses are highly theoretical and 40 000 engineers are being trained each year, we would say that that is far too many, if, on the

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other hand, training is highly practical and linked closely to local enterprise, it may well be too few.

We found it difficult during our visits to get a precise idea of how subjects are taught: we would have had to become teachers or students for several weeks in order to be able to judge. Our impression is that teaching is often rather theoretical and encyclopaedic, with practical work serving merely to illustrate lectures or courses rather than offering an opportunity for experimental learning or direct contact with real problems, though we did encounter some brilliant exceptions to this rule. In general, however, a theoretical orientation to teaching, along with the *carrera* in terms of organisation of teaching, appears to be the dominant model. We would have expected to see more differentiation, with some courses being more vocational, *i.e.* much more practical, others being more academic and building on close links between teaching and academic research. Most often, however, the vocational orientation of courses in the professional schools is fairly limited, and in large research institutions, research and teaching are separated. In a system of this size, we would like to see the development of a greater degree of differentiation, such that individual courses and thus institutions acquire a specific character and identity.

Additional requirements: the *titulación* procedure

Students passing all their assessments in all courses are called *egresados*, or leavers. There is also an intermediate category between those who fail and the *egresados*: the *pasantes*, who have met a "substantial part" of their obligations, such as obtaining three quarters of the necessary credits; they are, as it were, those who drop out at about the end of the cycle, without having really succeeded.

We have already mentioned the fact that, in order to gain a diploma, leavers must satisfy additional requirements. One of these is social service, an interesting feature of the Mexican system to which we shall return. However, there is another, of a more academic nature, for which a certain number of possibilities exist, varying from one institution to another (there are 11 such possibilities, for example, at the National Polytechnic Institute), and even from one school or faculty to another. The most frequent is a thesis, which may take a year or even longer; it could also be a dissertation, a project, professional experience, an excellent average in exam results, an overall exam, etc. We noted that many of those we interviewed were unable to give us a complete list of the possibilities available in their own institution.

A particular cause for concern is the fact that half of all leavers do not satisfy this additional requirement and thus do not obtain their diploma, which they need in order to take up a regulated profession or pursue post-graduate studies. The proportion varies from one discipline or institution to another: we met cases where

only a quarter of all leavers obtained diplomas. Some universities were worried about the problem. We were particularly interested in the solution adopted at UAM, where a project carried out by a team of students is incorporated into the last year of study, showing a clear pedagogical intent allied to the aims pursued in training future professionals (Table 2.14).

Table 2.14. **Graduates with a diploma as a proportion of all leavers in the same year, 1992[1] by group of disciplines[2]**

Percentage

Engineers	48
Sciences	62
Humanities	28
Social sciences	35
Law	57
Economics and business	45
Health	73
Total	**49**

1. The proportion is an order of magnitude only, as *titulación* may be obtained a year or more after leaving.
2. Grouping as per Table 2.12. Excludes teacher training diplomas.
Source: Anuario Estadístico 1993, ANUIES/SEP.

Post-graduate studies (posgrado)

Post-graduate study needs to be expanded in Mexico in order to provide researchers and improve the level of teachers in higher education. At present, most teachers (80 per cent) have only the *licenciatura*. We shall return to this question in Chapter 3.

Only a small proportion of the total number of students completing their first cycle of higher education (*licenciatura*) continue their studies. Assuming that there are approximately 150 000 students leaving the system at *licenciatura* level each year, and a little more than that if teacher training is included, the 20 000 new enrolments in post-graduate education represent a relatively small proportion (13 per cent), most of them in the public sector. Moreover, some of them are pursuing a specialisation, notably in medicine, and not necessarily preparing for teaching or research (Table 2.15).

Medicine dominates where specialisation is concerned, social and administrative sciences dominate in master's diplomas, exact and natural sciences in

Table 2.15 **Numbers in post-graduate courses in 1992 (specialisation, master's, doctorate) by area of study**

Absolute values and percentage

	Specialisation		Master's		Doctorate	
	Abs. val.	(%)	Abs. val.	(%)	Abs. val.	(%)
Agronomy	95	0.5	1 036	3	81	4
Exact Sciences and Mathematics	184	1	2 411	8	693	32
Education and Humanities	687	4	6 070	20	425	20
Technology	967	6	5 525	18	287	18
Social and Administrative Sciences	9 752	22	15 150	49	523	24
Health	11 755	67	998	3	142	7
Total	**17 440**	***100***	**31 190**	***100***	**2 151**	***100***

Source: Anuario Estadístico 1991, ANUIES/SEP.

doctorates, though they represented only 117 new enrolments and 80 doctoral diplomas. The best-represented disciplines are physics and biology. Mexico produces only 250 doctors each year. These are very low figures for such a large higher education system.

We also note a certain concentration of *posgrado* students. First, a geographical concentration: more than 41 per cent of them are to be found in the Federal District, and more than 50 per cent in a central zone including the states of Guanajuato and Mexico. The Jalisco and Nuevo León states are exceptions, with a combined total of 18 per cent. Second, a concentration in a few large institutions: alone UNAM accounts for 23 per cent of enrolments; it is followed by a few institutions such as the universities of Guadalajara and Nuevo León and the ITESM in Monterrey, where most students are in masters' programmes. Finally, a strong concentration in the public sector, with more than three-fourths of total enrolments, about 87 per cent in specialisation and doctoral programmes. Such concentrations of *posgrado* studies and research activities are not surprising, considering the history of higher education in Mexico. The concentrations have the advantage of providing the "critical mass" required for dynamism in advanced studies and research. One may ask, however, whether some efforts towards "federalisation" would not be useful. Smaller institutions can become, in specific fields, centres of excellence and so retain or attract good students and teachers and bring together teaching and research.

Post-graduate education clearly needs to be expanded, and the wheels have already been set in motion. Such expansion, however, should not be random, with each institution deciding for itself. Networks of institutions should be set up, and exchange students at this level; institutions such as UNAM, UAM, the *Colegio de*

México. IPN and its Center for Advanced Studies could be given a special role in setting up and developing these networks, and thus in the training of teachers. There are already cases in which they play an active role. Attention will have to be paid, however, to the fact that precise needs have to be met, with the emphasis being placed on research and teaching rather than entering into the costly spiral of a general prolongation of already lengthy studies.

THE OVERALL PICTURE: SOME WORRYING FEATURES

Complexity

We shall not spend any more time on the complexity of the system, especially in upper secondary education, as it is sufficiently apparent from the descriptions we have already given, despite their over-simplification. This complexity makes it difficult to define and, above all, to implement any overall strategy. It is also an obstacle to providing young people and their families with full information.

Furthermore, the frontiers between the various components of the system are anything but permeable. This is particularly true of teacher training colleges which, after more than ten years, still do not feel that they have been properly integrated into the higher education system. The technological sector also seems to be rather self-contained and inward-looking: those in charge of the system have all been trained in it and have pursued their careers in it. Frontiers between institutions are equally impermeable, especially because of the universities' autonomy. The result is a general lack of mobility. It is difficult for students to change institutions. Everything conspires to compound this problem: high schools affiliated to higher education institutions, automatic transfer, the difficulty of obtaining transferable credits for existing studies. We noted that teachers rarely move from one institution to another, creating a dangerously in-bred culture. The same is true of ideas: a number of interesting ones came to our attention, but they hardly ever move from one institution to another.

Lack of differentiation

Paradoxically, for all that the system is heterogeneous and complicated, there is also little differentiation within it. This is not to say that there are not enough streams: quite the opposite. There are too many. The problem lies rather with their rigidity and with the lack of options for leaving the system at an intermediate level. In the upper secondary sector, the predominant aim is to prepare pupils for higher education; courses which do not do so enjoy little esteem and are showing signs of flagging. In the higher education sector there is only one real exit point, the *licenciatura*. Young people entering post-compulsory education are setting out on a

path where practically the sole prospect of success requires at least eight years' study, after three years, the orientation is final.

Of course, we came across very different institutions: not only huge universities like UNAM and Guadalajara, Monterey Institute of Technology and the National Polytechnic Institute, but also smaller institutions throughout the country. It would be false to say that the impression we gained was one of uniformity. We found many differences, between Federal and State institutions, between the public and private sectors, between autonomous and centralised institutions, not to mention in the personality of the administrators and teachers we met. And yet we found that, despite these welcome differences of style and approach, despite the reforms represented by the creation of the IPN and, more recently, the UAM, all these institutions still function according to the same model. In one place there are faculties and schools, in another there are departments, but the sole reference everywhere is the *carrera*. There is not even any clear difference between the objectives of the universities and those of the technological sector, since the universities also have technological streams. The only real difference lies in whether or not they have autonomous status, and this concerns the administrators more than the students.

Thus we got the impression, despite these differences, that we were constantly dealing with the same type of institution. Of course there are some small, more recent universities or private institutions, which have clearly opted for a different approach. But apart from these few exceptions, the university model remains more or less the same from one end of the country to the other. The universities and other institutions are seeking to pursue the same objectives; this is true even of UNAM, caught in the contradiction between its ambition of becoming a great international research university and the pursuit of its ideal of democratising education, including at the *medio superior* level. We would have expected to find a greater degree of differentiation, for example, with institutions where research plays a primary role acting as vectors of an international reputation, with elite institutions helping the others to develop in a context of networks, with some institutions providing highly specialised professional training and others oriented more specifically towards regional development. Of course this implies a political judgement: are plaudits in order because a sufficiently uniform network has been established nationwide, or should greater differentiation be sought? To our mind, the system does not properly meet either one of these criteria.

Selectivity

In reality there is in fact one form of differentiation: between students who succeed and obtain the *licenciatura* or a higher diploma and those who drop out, some sooner, some later, and hence with a greater or lesser store of knowledge. The only possible qualification en route is the *bachillerato*. As the schools awarding the

bachillerato are of very different types and standards, however, the diploma is virtually meaningless. It cannot be regarded as an intermediate-level qualification except possibly in technological fields, where national curricula exist.

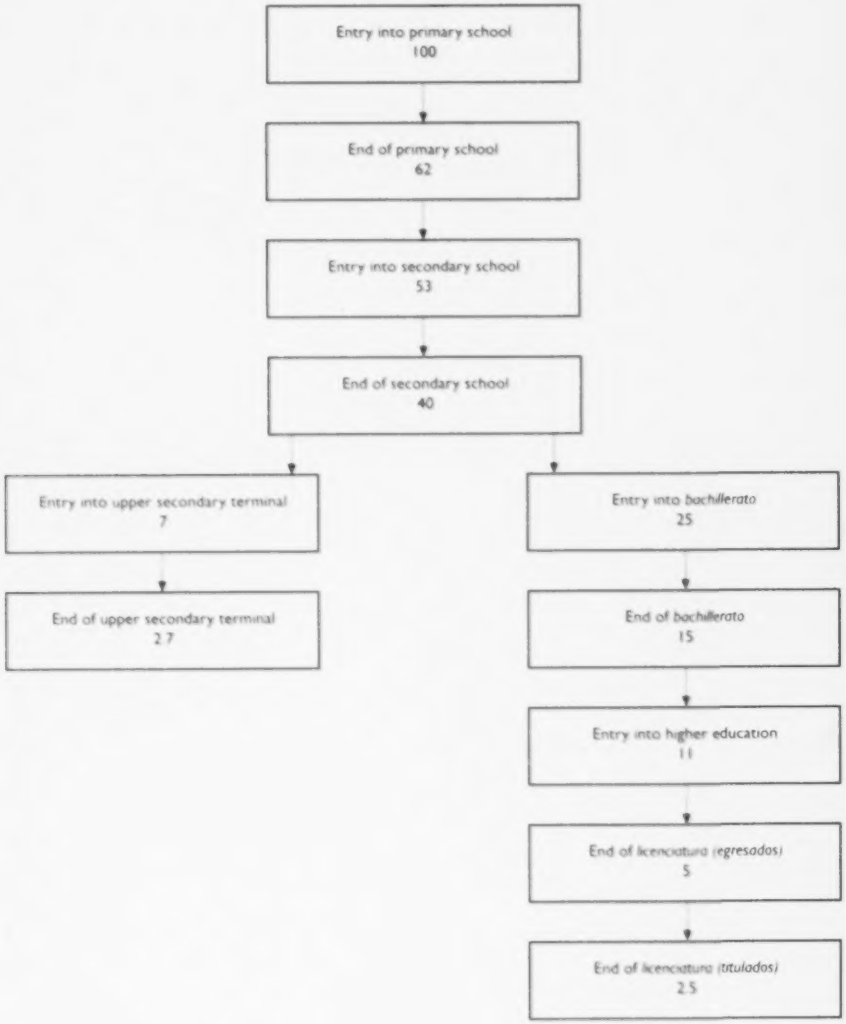
Figure 2 shows a representation of the progress of an age cohort through the education system from primary school entrance in 1976 to the award of a first-cycle university diploma (for some) in 1992. It is not a real cohort, because the diagram has been constructed as if there were no lag within the system, taking at each stage the transfer rate for the year concerned. The results might thus show some slight error, but they are significant nonetheless.

Without even considering what happens during basic education, we may note that, of the one third of the cohort entering upper secondary education, a little over half complete the cycle (2 out of 3 for the *bachillerato*, but barely 1 in 3 for vocational training) and only 1 in 3 go on to higher education. 1 in 6 finish their *licenciatura* studies and 1 in 12 obtain the diploma. These are staggering figures, and we feel that they are not sufficiently present in the minds of teachers and education officials.

For those who do not make it through to the end, a minority do not seek to enter higher education or are not accepted. The vast majority, however, drop out at some other point. The timing and causes of dropouts have not been studied comprehensively, although it would appear important to do so if a remedy is to be found. We were told that most people drop out early on, often in the first semester of each of the two cycles. If, as we were also told, the primary causes are economic, because young people cannot assume the cost of their studies or have to work at the same time in order to pay their way, this merely exposes the unfairness of the system. If, on the other hand, the causes are to be found in the fact that students find it difficult to adapt to the demands placed upon them, this must raise doubts either about the admissions procedure or about teaching methods. Another cause may be that, for some of the population, especially those of more modest origins, the prospect of such lengthy studies is discouraging, which brings us back to the lack of differentiation in course lengths. We also got the impression that teachers were not overly concerned by the dropout rate, which they seemed to regard as the normal way of things. The terms used in Spanish, *deserción* or *reprobación*, show clearly enough where the blame is assumed to lie.

The whole system operates as if its aim were to extract a restricted elite, with little care for the financial and, above all, human cost of so many failures. Although this meritocratic approach might have had its advantages when higher education was intended only for a minority that did not have too many worries about its future, when society was divided into a ruling class and an uneducated mass, it no longer corresponds in the slightest to the expectations of Mexico's present-day economy and society.

◆ Figure 2. **Flow diagram:**
Cohort entering primary school in 1976 tracked to 1992



170 Source: OECD

Moreover, the hurdle of *titulación* still remains even when *licenciatura* studies have been completed, distinguishing a few within an already restricted group. It is an invitation to companies to adopt different recruitment and wage-scale criteria for each group. A study of university graduates in the state of Mexico shows that the situation is further complicated by fluctuations in the economy. When jobs were easy to come by, there was a certain interest in leaving the system without a diploma. And yet a few years later young graduates, by the mere fact of having a diploma, are taking jobs to which their elders could have laid claim on the basis of their experience. We consider this artificial segmentation of the labour market to have been created entirely by the workings of the higher education system.

An unfair system

The more selective a system, the less socially fair it will be. We have already suggested that dropouts may be due to economic and social reasons, but some responsibility for failures may also be laid at the door of the upper secondary education system, either because that is where they happen, or because they happen on entry into the higher education system, or because in higher education the finger is pointed at the poor quality of instruction further upstream. As we have said, preparatory courses are of extremely uneven quality and attractiveness, with the result that selection is more or less rigorous. However, selection does not operate merely according to academic results: where pupils and families live, the information they are given and their ability to find their bearings in a complicated system are also contributory factors.[15] The most sought-after university-affiliated high schools generally enjoy the best teaching conditions; their links with great universities certainly contribute to their quality. But despite selective entry, these schools do not always have the lowest dropout rates. Differences in the levels achieved by students must therefore be very great. The organisation – or non-organisation – of the upper secondary education system thus helps unfairly to widen the gap.

Because of the very fact of expansion, post-compulsory education has become more democratic. Even though there have been few studies of this question,[16] it is clear that many students are the first in their families to enter upper secondary education. However, we fear that they may well be over-represented among those that drop out at whatever point. Likewise, despite a remarkable effort of "federalisation", considerable geographical inequalities remain. The access rate to higher education is three times lower in the states of Chiapas and Quintana Roo than in Puebla, Nuevo León or the Federal District.

On the other hand, it is striking to note that the breakdown by sex in the main streams of upper secondary education is very similar. In particular, the proportion of girls studying for the general *bachillerato* is exactly the same as the proportion of boys, and the proportion of girls entering university-affiliated high schools is also

more or less the same. The only notable difference is that there are slightly fewer girls in technological *bachillerato* streams but slightly more in vocational streams. Women now make up 45 per cent of numbers in higher education, though the proportion naturally varies according to the area of study, from a (creditable) 25 per cent in engineering schools to 58 per cent in healthcare and 64 per cent in the humanities.

A system under pressure

Mexico has put a great deal into improving basic education. Despite criticisms of the quality of the results, all the indicators show signs of progress: illiteracy, dropout and failure rates are falling, the average length of schooling is rising. It seems likely that within a few years the vast majority of new generations will complete the basic education cycle. Population growth, which is continuing albeit at a slower pace, will thus be overtaken by growing demand for access to non-compulsory education, *i.e.* by the democratisation of post-compulsory cycles as they become more accessible to new classes of society.

The pressure will be felt first in the upper secondary sector. This is in fact already beginning to happen, originating with the middle categories of the population, concerned for the future of their children and aware that, more than ever, that future depends on their level of education. We even feel that the system in its present state is at risk of turmoil, given the frustration it causes among those who are not accepted in the institutions of their choice, among those who, having been accepted, are unable to make it through to the end, and among those who, having taken less prestigious options, find that the door to higher education is shut on them by a selection process they regard as unjust because it does not apply to all. Protests have already taken place about entry into preparatory classes and the way in which they are regulated. The problems will only increase as basic education improves and as information circulates more widely in Mexican society.

The pressure, after having been felt in the upper secondary sector, will then shift to the first years of higher education. The difficulty will be in responding to the pressure other than by admitting more and more pupils into the same *carreras*, *i.e.* into already lengthy and perhaps ever-lengthening courses of study. It is by no means sure that the country has the resources to cope. It is also by no means sure that such options correspond to the country's needs and to the aspirations of this new clientele. Moreover, the proportion of failures and dropouts could rise even further, giving rise to new frustration.

RENOVATING THE SYSTEM

Not only is the current system thus fragile, it fails properly to meet the needs we highlighted in Chapter 1, *i.e.* reducing inequality, making room for the middle

classes, and placing the elite at the service of all. There must therefore be a move to overhaul the system, towards greater differentiation and less complication. From this chapter we can draw certain conclusions about avenues of change that would make it possible to break with past elitism and promote greater fairness.

Differentiation means introducing greater *flexibility* into the system. This flexibility is not limited to greater flexibility in the courses, though we have seen how necessary that is. It means allowing institutions, individually and as a whole, to respond better to the expectations of society, to economic needs and the needs of local development, to students' aspirations and possibilities. It also implies a broader range of exit levels, the possibility of resuming studies and acquiring a new qualification. It concerns what we may call the *relevance* of education. But relevance can only truly meet needs if it is matched by *quality*. Quality in turn depends on resources, both *human* and *financial*. These five points will be developed in the following chapter.

Although differentiation and simplification concern both levels, upper secondary and higher, they may translate into different options for change. In higher education, we regard a wider variety of exit levels and the pursuit of flexibility in general as essential. Reducing complexity is above all a means of strengthening national strategies, the aim being gradually to align the different sub-systems without sacrificing their specific advantages, while revisiting the notion of autonomy. It is less a matter of changing overall structures than of *steering the system* better: this will be the subject of Chapter 4.

In the upper secondary sector, the first priority is to bolster technological and vocational education, especially the latter, with the initial target of raising enrolment in such courses to one third of the total, and to reduce the dropout rate so as to develop middle-level professional qualifications. Here, however, we regard a move towards more unity as essential. The aim must be to create, between basic education and higher education, a *genuine national system of upper secondary education*, as in most countries, with its own set of aims and objectives and with clear, common rules, capable of accommodating all young people with the ability to benefit from this type of instruction. In the Mexico of tomorrow, the purpose of upper secondary education cannot be solely to prepare entry into higher education, any other path being regarded as a failure. Its purpose must also be to provide technological and general qualifications which enable their holders to occupy intermediate positions in the economy and in society as a whole. We shall return in Chapter 4 to the question of how such a system may be organised.

3

THE KEY ISSUES

The previous chapter led us to an initial diagnosis and enabled us to identify areas where reform is clearly needed. In this chapter we shall look at these questions in greater detail and set out some proposals.

FLEXIBILITY

Without going back to the sixteenth century, when universities consisted of the five faculties of theology, canon law, civil law, medicine and arts, it may be said that the function of higher education has long been to train a social elite: the members of the professions and senior civil servants. Professional life was its mainspring, curricula corresponded to each of the professions and were both controlled by them and, for the most part, taught by their members. One feature of the professions was their stability, and research did not appear necessary to teaching. In Mexico, access to the main professions (doctor, dentist, lawyer, engineer, chemist, architect, accountant, psychologist, etc.) is still restricted, each graduate's qualifications being formally ratified by the General Directorate of the Professions at the Under-Secretariat for Higher Education, pursuant to Article 5 of the Constitution and its implementing legislation.

During the period of expansion the higher education sector, under the pressure of demand and motivated by an ideology of democratisation conceived as identical growth, did little to call this ancient model into question. And yet the country was industrialising, managerial and technical jobs in business and industry were proliferating, career prospects were becoming wider-ranging and more diverse. The response was the creation of institutes of technology along the lines of the National Polytechnic Institute and, above all, a considerable increase in the number of *carreras*: there are now 738 different *licenciatura* degrees nationwide[17] and their number has increased eightfold in twenty years, rising to 13.5 in engineering and 16 in agriculture. Proliferation on this scale, without raising questions as to the overall structure of studies, has merely rendered the system even more complex, distinctions even more rigid and comparison between different institutions, and hence mobility, even more difficult. Moreover, its relevance is based on the assumption of the existence of jobs that are both precisely determined and relatively stable

over time, corresponding to higher education streams. Although this might be true for the professions, however, it is very far from being the case in business and industry.

With the passage of time, and in view of the various crises that have shaken the world in general and Mexico in particular, it has become apparent that changes in the labour market have outstripped the extension and diversification of higher education pathways. The accelerating pace of technological change is leading to what has been called the intelligence revolution, meaning the utilisation of knowledge not only as a means to enter a career and accede to a social position for life but also as a factor of production, adaptation and competitiveness. Moreover, the globalisation of the economy has gone hand in hand with the emergence of major regions where a certain measure of transparency is required and where there is a certain degree of mobility of goods, ideas and, ultimately, people. North America is now one of these regions. These two changes imply a considerable degree of economic uncertainty, the need for greater labour market flexibility and, for individuals, the certainty that, whatever the quality of their initial training, they will have to adapt to change and continue to learn throughout their working lives. Flexibility and mobility have become two key factors in today's world.

An education system characterised by inflexible pathways and career tracks is thus no longer appropriate. First, having to make an early and irrevocable choice does not make it easy to distribute students harmoniously between streams. It is surely not reasonable that in Mexico today one third of all students should be enrolled in accountancy, law and administration courses, which are also those in which numbers have risen fastest despite the fact that it is far from certain that employment opportunities have kept pace. By contrast, less than 2 per cent of students in 1994 were enrolled in the natural and exact sciences, compared with 3 per cent in 1980.

Second, even though it may appear paradoxical, a system of narrowly vocational streams is no longer suited to a labour market which lays such great emphasis on the "professionalisation" of jobs and of the people in them. Professionalisation relies at least as much on personal and horizontal skills (taking responsibility, communicating, working as a team, collecting documents, reasoning, etc.) as on the knowledge specific to a profession or sector of activity. Furthermore, early specialisation can have unfortunate or even tragic consequences: it is not possible simply to ignore the case of graduates from teacher training colleges who, after four years of study, discover that there are no jobs for them. This is just one example of the difficulties caused by the excessive importance accorded to the *licenciatura* and the lack of any intermediate exit point: the decision in 1984 that teachers for the basic education system should follow higher education courses was doubtless justified, but was it necessary to insist on four years of higher studies, approximately the same amount as for most university teachers? Let us not forget either the

unacceptably high dropout rate, largely attributable to this rigidity, which represents a waste of human potential that should be an acute cause for concern.

The time has come, then, to draw the conclusions from this analysis and consider three types of flexibility: flexibility in the streams leading to a given level of education, especially the *licenciatura*; greater diversity of levels and types of course; and the possibility of lifelong progress through education. There is already no shortage of initiatives, so much so that it is impossible to mention all of them here, and it is hence not difficult to put forward proposals.

Flexible courses

The centralised system of institutes of technology has recently reduced the number of streams from 55 to 19; specialisation now takes the form of end-of-study options. One idea that is worth developing throughout the system is that of gradual specialisation, with courses in a given field being presented as a tree diagram. This would make it possible to open up new areas of specialisation useful to the economy without increasing the number of *carreras*. In the universities, a move could be made towards grouping professional schools together in more multidisciplinary structures. Teachers could be given greater scope, as is already the case in universities which have adopted a department structure. Could this not also help to bring teacher training colleges and universities closer together – teaching is one professional career among others – so that students could move from one to the other?

Certain types of knowledge and skill, such as computer literacy, basic economics and foreign languages, should feature in all courses. This principle could be implemented in the form of a common core, which would enable students from different disciplines to meet each other, or adapted specifically for each stream, especially in the choice of applications, so as to give students more motivation. We also noted that, despite some outstanding exceptions and the initiatives currently under way in many institutions, the study of foreign languages is insufficiently widespread among students and teachers alike.

In order to achieve greater flexibility, a modular "credit" system similar to those already in existence in some universities could be introduced. In this case the responsibility for choice lies with the student; knowing how to choose is an aspect of any education suited to the needs of the modern world. Students need guidance, however, especially when a new system is being set up which they may perceive as revolutionary, and existing guidance services appear to be relatively rudimentary. But a credit system has many advantages. First, it means that the length of study may be varied to suit the rhythm of each student, especially as many of them have to work while they are studying (we could also comment at this point that we find the average duration of current studies too long). Second, it facilitates student

mobility, whether internally, nationally or internationally, provided that the universities agree on mutual recognition of their credits. This of course implies more comparable curricula and reliable assessment of knowledge, a point to which we shall return.

Diversification of levels and types of course

As we have already said, the Mexican education system is divided into two main blocks: basic education, intended for all children, and higher education, preceded by upper-secondary education, for the elite. Intermediate technical courses have gradually been created, with the National Polytechnic Institute and, later, CONALEP and other terminal courses at upper-secondary level, plus centres providing elementary vocational training (*capacitación para el trabajo*). These courses meet a modern economy's needs for technicians and skilled workers, but only very partially: from a qualitative standpoint, the courses run by vocational training centres are often rather short and of variable quality, while the validity of CONALEP and other similar programmes is being questioned. From a quantitative standpoint, these courses attract only a small and diminishing minority of students, young people are more attracted by courses that give them access to higher education.

In higher education itself, there is practically no possibility of leaving the system at an intermediate level. The only notable exception is the recent example of the technological universities which offer two-year advanced technician courses. Although promising, there are only some 3 000 students on this type of course. And yet we were struck during our visit by the dynamism of these institutions and the innovative nature of the teaching, the importance attached to workshop and laboratory work, to long periods of work experience, to close co-operation between teachers and companies. Despite the crisis, the graduates seemed not to have difficulty finding qualified jobs. We were even told that their salaries were often higher than those of young graduate engineers.

We feel that this initiative deserves the consideration of the Mexican authorities. In many OECD countries, short-cycle higher education courses lasting two or three years with a more practical or vocational slant are an essential feature of higher education strategy. Examples include *Instituts universitaires de technologie* in France, *Senshu Gakko* in Japan, *Fachhochschulen* in Germany, Community Colleges in the United States and Canada, and the *Collège d'enseignement général et professionnel* in Quebec. Similar cycles have also recently been introduced in Italy (*diploma universitario*), in Switzerland (*hautes écoles spécialisées*), in Austria (*Fachhochschulen*)[18] and in Finland (*ammattikorkeakoulut*).[19] In most cases these cycles are organised independently of other higher education cycles, but they can also be organised by universities or other higher education institutions.

If we compare this situation with that of European countries, Mexico, as we have seen, is relatively well placed in terms of high-level vocational courses lasting four or five years, especially for engineers (almost 40 000 a year, almost twice as many as France for a population only 1 5 times bigger). But we also showed that in most European countries, 50 to 80 per cent of pupils in upper-secondary education are following vocational or technological courses; moreover, short-cycle higher education courses attract a significant proportion of students entering higher education. The effectiveness of a modern economy depends to a considerable extent on its technicians and middle managers: within the North American economic area, the development of these intermediate qualifications may in the medium term represent Mexico's opportunity. In particular, trained technicians and middle managers are better suited to the needs and capacities of smaller enterprises which represent the bulk of the Mexican economy.

We have also drawn attention to the dangers of division presented by a polarisation of society at a time when the deregulation and globalisation of the economy are continuing to widen the social and cultural gap. As far as the very aims of democratisation are concerned, the quantum leap whereby, in a single generation, the children of families who had received only primary education go on to five years of higher education is extremely difficult to make and is thus possible for only a small number.

The development of intermediate qualifications is thus in the interest not only of economic competitiveness but also social harmony. At upper-secondary level, this would be linked to the desirable and likely increase in length of schooling; while at the higher level, where intermediate qualifications are almost entirely absent, they would have the additional objective not of reducing the number of those graduating but of substantially reducing the number of students dropping out of the system without any diploma and of offering new prospects to this extended clientele.

The latter remark is not without significance, since any initiative seeking to develop intermediate qualifications would doubtless be met with an accusation of this sort. If intermediate qualifications have not been developed earlier and have not expanded, despite the support they enjoy from many players in the economic sphere, it is no doubt because they come up against a deeper problem: the traditional attraction of the *licenciatura*, which defines the "professional" level. Although this difficulty looms especially large in Mexico, where this word cropped up time and again during our interviews, it exists to a greater or lesser extent in all countries. More often than not, the length of general education traditionally determines social position. As a rule, there are streams that lead to higher education and streams that do not, or only with difficulty, the latter tending rather to aim at entry into working life. This inevitably leads to a devaluation of vocational training in

relation to general education because it leads to jobs that are more lowly than those that a student pursuing a general education might hope for.

In Mexico, the technological *bachillerato* provides an instructive example of a solution that has misfired: as we said earlier, it is "bivalent", meaning that it can lead either to direct entry into the labour market or to higher education. It is thus not a blind alley, like terminal courses at the same level. This makes it more attractive, and enrolment rates are indeed rising at the expense of terminal courses. In fact, however, the vast majority of those passing the technological *bachillerato* rush into higher education, seeking courses that lead to the *licenciatura*. If, as we recommend, Mexico promotes the training of advanced technicians at the higher level, great care must be taken to ensure that a similar problem does not arise afresh.

Transition from one level of qualification to another and lifelong education

There is therefore little room for manœuvre between a blind alley which fails to attract young people and an open path which encourages them to pursue lengthy studies. This is a matter of concern, more or less acute, in all countries. We would like, however, to make one suggestion. It consists in introducing in co-operation with employers, levels of training and qualification that are recognised by them and enjoy a positive social image, and possibilities for crossing over from one to the other, from elementary vocational training to technician's courses, from technician's courses, after so-called terminal training, to advanced technician level, from advanced technician to *licenciatura* (although not necessarily the traditional one), and even from *licenciatura* to post-graduate study. The transition could be made, preferably, via recurrent training, *i.e.* training after a period of employment.

This would create streams with entry and, more importantly, exit points at different levels, together with the possibility of returning to them later in the context of recurrent training. "May every soldier carry in his cartridge-pouch the baton of a marshal of France," as Napoleon said. The aim here is to try and accommodate the development of intermediate qualifications, flexible courses and personal mobility by emphasising the possibility of lifetime training. More generally, continuing education and training need to be developed in Mexico. Demand has begun to emerge since the 1978 Law on labour, and higher education institutions should ensure that they are in a position to play a much fuller part than is the case at present.

In streams with several exit points, however, the mode of learning does not always suit the kind of gradual specialisation we were recommending earlier. The definition of curricula requires thought about how the transition from one level of qualification to a higher level should be made: although in the professions, such as medicine for example, it consists in specialisation and deeper knowledge, in

modern business and industry it rather involves an extension of professional skills in order to gain access to positions of responsibility, such as managerial positions or positions where strategy is defined and where decisions are taken, that call for greater autonomy. trainers then have to find out how to develop skills from the corpus of specialist knowledge and know-how acquired at the previous level. This therefore implies two pedagogical approaches, one more deductive and the other more inductive, which could be adopted by different types of institution. Institutes of technology, for example, could develop the inductive approach, in both initial and continuing training. In either case a system of "credits" would be useful provided that the rules for choosing modules and going on to further modules were strict enough. A modular system could in fact make it easier to find a compromise between flexible training over time and personal mobility.

Can a link be detected between these suggestions and the planned skills-based national system of standards and certification (*sistema normalizado de competencias laborales*) developed with the backing of the World Bank, albeit apparently for lower levels of qualification? Doubtless, and there is an opportunity here to advance towards a more flexible system incorporating the various levels, beginning at skilled worker level. Criticisms have been made of this type of system, however, not least in the United Kingdom, where the system originated in the form of National Vocational Qualifications. The main caveat is that a vocational qualification is not a jigsaw puzzle of independent skills measured at a particular moment in time. Moreover, the starting-point for such a system is employment needs, which are easier to define in a taylorist system – now disappearing – than in a more open-ended organisation of work. Mexico's enterprises are particularly diverse, with a sizeable informal sector and many large foreign-owned and managed companies which seek to introduce the vocational structures they are accustomed to in their home country or use existing labour rather than to define their needs. We would be wary of any standardisation blithely imported from elsewhere. We believe not only that it would be difficult for a policy based exclusively on demand to prove effective, but also that a supply policy remains necessary and even that, if implemented properly, it could have a structuring effect on employment. Ultimately, the education system and enterprises must be joint begetters of both qualifications and training.

More generally, the question is of finding the driving force that will make it possible to embark on the proposed changes and direct them so that they meet the economic and social needs of a country that is itself "in transition". Clearly, this driving force must be sought in closer links between the education system and the economy and, more generally, society as a whole. To give an example, the development of intermediate qualifications, which we recommend, must be in proportion to recruitment needs at that level. Moreover, we believe that the resources which

Mexico is willing to devote to education in general and higher education in particular depend on the quality of such links.

RELEVANCE: RELATIONS WITH SOCIETY

Overall, such links are weak, even in the technological education sector. As we have already said, the higher education sector has traditionally preferred to regard itself as the custodian of the national identity and the critical cutting edge of society rather than to pay attention to the concrete needs arising from the changes taking place within society. It is symptomatic in this respect that the governing bodies of public institutions do not, as a rule, include any outside representatives; private institutions, on the other hand, have stronger links with the economy. Reciprocally, many social players, especially from the economic sphere (employers' organisations and trade unions), expect nothing specific from higher education and go no further than proffering remarks whose tenor, while sometimes generous, is most often general. A certain number actually show a marked preference for private institutions.

And yet the desire to forge closer links is strong among many higher education officials, among students and, to a certain extent, among employers and employers' bodies such as COPARMEX (*Confederación patronal de la República mexicana*), CANACINTRA (*Cámara nacional de la industria de transformación*), CONCAMIN (*Confederación de las Cámaras de la Industria*) and the Chambers of Commerce, particularly at regional level. A conference on "qualification, training and employment" held at the University of Guadalajara in May 1995 was a clear demonstration of this desire. Here again, inspiration for suggestions can be found in initiatives that have already surfaced here and there.

Strengthening links with the economy

The aim here is to keep pace with economic change and participate in national and local development, especially through the creation of new businesses. Certain institutions, usually created in recent years, such as the technological universities, other recently founded universities and institutes of technology set up with backing from the states, have set themselves the explicit goal of encouraging local development. These examples, as with similar examples in other countries, suggest four avenues of exploration, which apply as a priority to technological and engineering streams and more generally to those with significant employment opportunities in business and industry. They concern curricula, institutions and their component parts, teachers and students.

Curricula defined in collaboration with the professional world

In the vast majority of cases at present, courses and curricula are defined without any form of consultation with economic partners, making their economic relevance highly uncertain. Representatives from enterprises were consulted, however, on the occasion of recent curriculum reforms in institutes of technology, although the final decisions were taken subsequently by the teaching staff alone. A further step needs to be taken by creating, for each economic sector, a standing committee, made up of both representatives from enterprises and teachers, which would have decision-taking powers, or at the very least the power to make proposals to the relevant Under-Secretariat; of course all types of enterprises, not only the larger ones, should be represented. These committees would be organised at national level, though a certain part of the curriculum would be left free for the necessary adaptation to the local context, as is currently the case. Such national committees already exist for each of the specialisations offered in technological universities. The issue is less straightforward for the universities in general, given the fact that most of them are autonomous. National committees, working in collaboration with ANUIES, for example, could submit opinions and advice.

It is important that the work of such committees, based on an analysis of needs and the definition of the skills required by employers at the various levels of qualification, should be highly professional, meaning that they must be endowed with sufficient human resources. This is also a reason for not setting up separate committees at state and university level. However, building on the experience gathered by other countries in this area, it is to be hoped that the necessary competences can be found among both teachers' and employers' bodies. It would also be helpful to associate trade unions with the work of the committees. It is by no means sure, however, that this could be accomplished effectively in all cases today, and it could be regarded as a longer-term objective for which their representatives should prepare.

Work undertaken by institutions on behalf of companies

Certain institutions, sometimes with the encouragement of CONACYT or FOMES, undertake work for private or public companies, including surveys, research projects (sometimes in the context of "junior enterprises") and continuing education. They are paid for their work, but such initiatives also provide material for training their students and an awareness of the needs of the economy. The companies also reap the benefit, and this sort of approach can be one way in which the higher education sector participates in local development, as we observed in a number of places. Such activities seem quite natural for technological universities. The institutes of technology, by contrast, seem to find it difficult to embark on such schemes. We were told that they are not allowed by law to enter into contracts with

companies, doubtless because they do not have legal personality. Regulatory problems therefore have to be solved where they exist, and all institutions should be encouraged to carry out work on behalf of and in co-operation with companies.

Teachers drawn from companies

We shall come back later to the large number of teachers who do not teach full-time. We are aware that in the past most teachers used not to teach full-time, because in many cases they were practising members of their professions training their future colleagues at university. Now more than ever, the best use of non permanent posts would be to recruit employees of companies or administrative agencies who can bring their professional experience into the classroom. This possibility is far from being sufficiently widespread, even though it is the rule in technological universities. Moreover, for permanent posts in institutes of technology, preference could be given to teachers with substantial experience in industry.

Work experience for students

Many students already have a paid job at the same time as studying (the proportion is approximately 30 per cent at UNAM). Apart from the often vital material resources that such work provides, in this way students also avoid the lack of contact with the adult world, that is the price of lengthy studies. Such activities enable students and companies to get to know each other, which in turn facilitates access to employment. It should be pointed out, however, that timetables do not take into account the fact that some students also have jobs, which imposes truly inhuman schedules on a certain number of them.

In addition, such jobs are not compulsory, are not linked to studies and may in fact have little if anything to do with them. There is thus no pedagogical advantage to be gained from them in the sense of diversifying access to skills and acquiring knowledge in the workplace that it is impossible to learn in the classroom. If such activities, on the contrary, were organised as part of course work and monitored by tutors on both sides they would also encourage greater mutual understanding between institutions and enterprises, enabling them to redefine types of work and types of training together, harmonising the short-term imperatives faced by companies with the long-term aspects to which education institutions are more sensitive. Periods of work experience already exist in many countries as part of technological courses and count towards the final diploma.

It is doubtless for these reasons that since the recent reforms, students in institutes of technology are required to complete a period of work experience, in theory lasting a semester. This practice should be extended, with the aim of making it compulsory, though perhaps some form of financial or tax incentive for firms would be needed.

From the economy to society as a whole

We have emphasised the link between the economy and employment because it is the most obvious preoccupation in Mexico as the country seeks to emerge from crisis. Today's buzzwords are change, modernisation, transition, adaptability, mobility and flexibility, and "deregulation", "globalisation" and "market forces" are on everyone's lips. However, we feel that this language, although necessary and so widespread now in many countries as to constitute almost a single strand of thought, is far from offering a comprehensive description of the reality. Can we speak of a sea-change in the nature of employment or the structure of economies when all people, and perhaps all societies, conceive of themselves first and foremost as unchanged? Can we speak of modernisation and information superhighways when large numbers of men and women throughout the entire world have never left their village or their neighbourhood? Can we speak of the global marketplace when their primary concern, including in Mexico, is often where the next meal is coming from?

The task of education, and of higher education in particular, is perhaps to connect these two opposites, to provide some degree of coherence so as to ward off social breakdown and strengthen civil society. Of course, education alone cannot achieve this goal and there is no question of our making proposals on the scale of such challenges; rather, we seek to draw attention to a few practical aspects of relations between education and society, especially among those who do not send their children into higher education.

Access to higher education is demonstrably inequitable in all countries. In Mexico, where education continues to be seen as holding out a hope of social advancement, this inequality should be more present in the mind of public opinion; a first step would be to build up national statistics on the social origin of students.[20] Moreover, when higher education is funded mainly from the public purse, as is the case here, and hence by the population as a whole, there is a risk that inequality of access will be compounded by financial injustice. Scholarships and study grants could provide one corrective mechanism, the principle being that no young person acknowledged to be capable of benefiting from higher education should be prevented from studying because of financial difficulties. Clearly, this would involve a considerable extension of an already complex and not very developed grant system.

One remarkable measure dating back to the 1930s which makes it possible to establish a link between the two poles of society is student social service; it is one of the conditions for obtaining a university degree. In practice, however, the idea is poorly applied: it is either a pure formality ("you just have to go and sign up"), or replaced by work experience – generally in the public sector – which is of another nature and has a different purpose, or reduced to activities without interest

("making coffee for the boss"), or spent within the higher education institution itself. But where its initial objective is still present, as for many students in the healthcare sector, it is accepted without difficulty or even with enthusiasm. Social service cannot be left as it is; it must be redefined so that it is spent with and on behalf of less-favoured sections of the population, minimum resources must be earmarked, those responsible for overseeing the programme must be trained, projects must be defined at local level with the populations who could benefit from them. It represents an opportunity for educational institutions and state authorities to work together. More generally, for institutions not located in the Federal District, the states act as intermediaries in relations with society, a subject to which we shall return.

But developing relations between the higher education sector and the economy and society as a whole would be pointless if at the same time the quality of education were not maintained, improved and guaranteed. This "assurance" is especially necessary for diplomas to be recognised on the labour market and more generally for enduring and harmonious relations to be maintained.

QUALITY

In Mexico as in many other OECD countries, the quality of higher education is a primary concern of all players, especially education officials. The word cropped up time and again during our interviews, though applied to often very different situations and sometimes seeming to be uttered almost parrot-fashion.

Measuring quality

One approach involves measuring quality in terms of "terminal" efficiency, as we have already mentioned, meaning the proportion of students who, having entered the system, leave it successfully. This criterion, though doubtless important, is far from being sufficient. What would people think of a university whose students were all successful but learnt nothing? On the other hand, would it be better to select just a very small proportion of candidates, who in that case ought to be excellent? The most important thing ultimately is what students know, the knowledge and skills they acquire and what they go on to become, especially in their professional lives. These are three complementary issues, one relating to efficiency, another to what happens to those leaving the system, the third relating to what students have learned.

Figures, albeit imperfect, exist concerning efficiency. In the absence of an information system making it possible to track students individually, the number of successful leavers in a given year is often simply divided by the number of entrants five years earlier, as far as the *licenciatura* is concerned, without taking account of the real length of studies. The term "successful" also needs to be defined.

depending on whether the calculation includes only those who are awarded a degree (*titulados*) or those who pass academic assessments (*egresados*) without necessarily meeting the additional requirements, the efficiency ratio can vary by almost the same amount again. In all events it is too low, around one quarter or one half for the *licenciatura* depending on the definition used. This is also only an average, and in some cases efficiency is much lower than that.

There is very little available information, whether at national or institutional level, on what happens to students after they leave higher education. Surveys and studies of the subject exist, including a study of engineering graduates from institutes of technology[21] and a smaller survey of graduates from Mexico State University.[22] These studies are doubtless extremely helpful in highlighting certain aspects of higher education, especially qualitative aspects. However, they do not add up to a genuine information system on employment trends. And yet such work is an essential preliminary, not only for the measurement of quality but also for any forecast of future education trends. We shall return to this point in the following chapter.

As regards the assessment of students' knowledge and skills, the current system is not sufficiently transparent. Essentially, assessments are carried out each semester (or sometimes each term) and at the end of the cycle. Practices seem to differ widely. In the most extreme, though regrettably frequent, case, assessments are carried out alone by the teacher of a particular group of students, in the form of a mark or grade based solely on the teacher's personal convictions, with no comparison between groups of the same level carried out by other teachers; moreover, students can choose their teacher at the beginning of each semester. We were told, at least as regards one institution, that there had been numerous errors or irregularities in admissions procedures, study pathways and exams. Fortunately, efforts are apparently being made to improve the reliability of assessments, particularly in the form of an exam in which a team of teachers is responsible for assessing all students at the same level. This has also led quite naturally to a collective assumption of responsibility for their instruction, which is assuredly one way of improving quality.

A further step would be the creation of national criteria for knowledge and skills in each stream, and assessments conducted on this basis. Clearly the work involved would be enormous; the curriculum committees that we recommended introducing should also take part, and the experience of other countries could be most useful. One extremely positive point is that this task has already been embarked on, at *bachillerato* and *licenciatura* level and at entry into upper secondary education, by the CENEVAL (*Centro Nacional de Evaluación para la Educación Superior*), created in 1993. Its quite remarkable work should be given determined support, recognizing the need for its continuation.

The question of the reliability of diplomas is a very serious one, affecting their value on the labour market and their recognition by other higher education institutions in order to promote student mobility. The issue also has an international dimension, especially as regards promoting the mobility of graduates as envisaged in the North American Free Trade Agreement. It is a precondition for the modernisation of assessment techniques: introducing a system of credits without any quality assurance, for example, would be tantamount to issuing counterfeit money.

It also depends on the conditions under which degrees are actually awarded. As we have said, *licenciatura* candidates who do well in exams (which defines them as *egresados*), have to fulfil additional requirements which are scrupulously checked by the General Directorate of the Professions before the degree is ratified: one of them is social service, which we have already mentioned. But the academic requirement of a thesis seems to evidence a fear that *licenciatura* studies do not develop synthesis aptitudes, or drafting skills, or to emerge from a confusion with the post-graduate studies cycle, a sort of compensation for the low number of graduates going on to post-graduate studies and a further obstacle before gaining access to them. Would it not in fact be better to devote efforts and resources to the acquisition of such skills in the course of *licenciatura* studies or to the development of post-graduate studies? The requirement of a thesis or an excellent exam average or a general exam on completion of studies may be interpreted as a lack of confidence in prior assessment: would it not be better to ensure the quality of such assessment? As we have seen, almost half of all *egresados* do not try to acquire the *licenciatura* in order to avoid a long and complicated process whose educational value may appear doubtful. They have to seek employment outside the professions for which the qualification is required, with an attendant risk of more limited career opportunities on entering the labour market or during working life.

Thus our proposal as regards award of the *licenciatura*, inseparable from the improvement of the quality of teaching and the reliability of assessment and the broadening of access to post-graduate studies, would be to do away with any additional requirements after the last semester of study, with the exception of social service. The General Directorate of the Professions would find its task much lightened, especially if more confidence was placed in educational institutions by giving them greater responsibility for the value of their diplomas; it could then perhaps spend more time studying and providing information about the needs of the professions.

Assessing institutions

The idea that higher education institutions should be assessed, and more specifically should assess themselves on the basis of standard indicators, has made considerable headway in Mexico in recent years, especially since the creation of the

CONAEVA (*Comisión Nacional para la Evaluación de la Educación Superior*), set up in 1990 with the particular assignment of encouraging self-assessment in universities, and of the CIEES (*Comités Interinstitucionales para la Evaluación de la Educación Superior*), set up to assess and "accredit" courses. Certain institutions, especially private ones, have sought accreditation from foreign bodies such as SACS (Southern Association of Colleges and Schools) in the United States. The Federation of Private Institutions (FIMPES) has set up an accreditation system for the admission of new members, which is a step towards the necessary clean-up of a private sector in which the best and the worst rub shoulders.

All these initiatives provide an essential foundation for the continued progress of the entire higher education sector. An assessment culture is beginning to take root. It now remains to build up a genuine national accreditation system for institutions and their courses, a primary concern of ANUIES. Such a system needs to have an international slant and must also avoid the trap of assessments that remain exclusive to the higher education sector. It is essential, for example, that representatives from the world of business and industry should take part, and some professional bodies have already started work along these lines.

The quality measurements which we mentioned earlier (efficiency, acquired knowledge, what happens to graduates after they leave) are the basic indicators for any assessment. Of course, if institutions were to be compared on such results, a certain degree of caution would be necessary because of the diversity of student populations. The value of students on entry is clearly an important factor in the quality of results. The social, economic, cultural and academic context of the state in which an institution is situated has an influence which it would be unfair and inefficient not to take into account, and we are aware here that there are very considerable differences between one part of the country and another. Nonetheless, each institution is responsible for the students it admits, by the ways in which candidates are selected and, in some cases, by the preparation they have undergone. Low efficiency rates after tough selection procedures may seem surprising, or even scandalous.

The assessment of an institution is clearly not limited to the measurement of quality in terms of results. It also concerns quality in another sense, that of the implementation of a policy, which makes it possible both to explain the results and to find out how to improve them.

In this context, the first question to study is whether such a policy exists, whether it has been clearly set out and whether it is understood by all those involved in the institution. The institutions we visited, especially the universities, do indeed have a policy which is often set out in a document – a plan or a project – valid for a rector's term of office. This lack of a long-term perspective may be regrettable. However, we felt that the staff, and even more so the students, were very poorly informed about such policies and that their horizons were limited at

best to the unit – faculty, school or institute – of which they were a member. This is a problem which is also to be found in other countries and which is due in part to the size of institutions. Moreover, we felt that in many cases projects did not contain clearly stated pedagogical choices, including (though this may seem somewhat surprising) in private institutions, perhaps because of an over-indulgent interpretation of the notion of academic freedom. Lastly, we did not feel that there was any clear link between institutions' plans or projects and a national policy or set of national priorities, or local development objectives in which resources and responsibilities would be shared out judiciously.

The factors with which and on which it is possible to act may be divided into four groups. We have already considered student populations and curricula; the other two groups are human and financial resources.

STAFF

Staff issues are vital, since it is with and through the people working in the sector that higher education can evolve.

Staff are recruited and managed by the different institutions themselves, which doubtless explains why it is not easy to obtain comprehensive and consistent statistics. Although national wage agreements exist, for example, there is no national framework within which staff policy can be reviewed.

There were 133 000 teachers in 1993-94, excluding teacher training colleges, and their numbers multiplied fivefold between 1970 and 1994. Compared with the number of students, this gives a ratio of less than 10 students per teacher, which may seem extremely comfortable. Things are not so straightforward in reality, however, because less than 30 per cent are employed full-time, approximately 8 per cent are employed part-time (usually half-time) and the remainder are external teachers, having a job in a profession outside the educational field. Under these conditions, staff-student ratios soon become meaningless.

This situation, which may seem a little odd, is the result of a succession of events of which we have spoken earlier. First, there was a traditional approach whereby future members of the professions were trained by existing members, full-time posts being few and reserved for the most eminent personalities. This situation may be summarised as one of professionals who teach rather than professional teachers. Then, during the period of very rapid expansion during the 1960s and 1970s, it became difficult to recruit enough teachers with the necessary diplomas and qualities, and yet it was at this time that external teachers became a lower 'caste' in the profession. Since then there has been a tendency towards professionalisation, in the sense of an increase in the proportion of permanent teachers (both full-time and part-time) at the expense of external teachers. The proportion rose from 25 per cent in 1980 to 35 per cent in 1994, though this is still low and varies

considerably from one institution to another. In post-graduate studies, the proportion has sunk to barely more than half the average.

As the average number of students per teacher has also fallen over the same period to the same level as in 1970, it may be concluded that the staffing ratio is improving. In fact, there does not seem to be any real staff shortages. This is not to say that there may not be local shortages, and in this respect greater possibilities for staff mobility between institutions would be desirable. This problem illustrates the disadvantages of the absence of any national framework. Mobility would also help to improve quality by avoiding academic "inbreeding".

As regards quality, assessment is less straightforward. Students – who are perhaps best placed to judge[23] – say, as might be expected, that competence varies enormously from one teacher to another. Their criticisms concern teaching ability first and foremost, followed by assiduity and punctuality. Education officials speak more of the need for scientific further training in the subjects to be taught. Doubtless both are true, and there is nothing surprising in the fact bearing in mind the extraordinary growth of Mexican higher education between the early 1960s and the early 1980s. Teachers for the largest generations of students had to be recruited from among smaller generations of graduates. Young university teachers hardly had time to finish their studies, never mind undergo further training, before finding themselves in front of a class. Overall, they coped, and it is on this foundation that future progress can now be made.

The student growth rate began to slow in the 1980s, while growth in the number of teachers, and especially of full-time teachers, has continued apace, perhaps in order to catch up, but certainly because of the way in which university budgets were calculated, the number of teachers being a key parameter. This could have worked favourably if at the same time budgets had not been cut in real terms since the 1982 crisis. As staff costs take up the lion's share of institutions' budgets, wages have tumbled: in 1992, the average salary of a full-time teacher in a public university was US$44 500 in the United States and US$12 000 in Mexico; staff in private universities did slightly better, the average salary being US$19 000.[24] Although there was a slight improvement in the early 1990s, teachers in the higher education sector seem once again to be losing purchasing power. Of course, they are not the only Mexicans for whom this is the case. However, it must be emphasised that this situation is a cause for concern if teachers are to be asked to make an extra effort to transform their profession at a time when many of them are looking for additional outside work in order to prevent their standard of living from falling too far. It also makes it that much harder to recruit teachers from among those who already have jobs in enterprises.

A similar situation applies to non-teaching staff, such as administrators and technicians, who are in fact more numerous than the teachers: in state universities the ratio of non-teaching to teaching staff is five to three, and it should be

remembered that a minority of teachers are employed full-time. This ratio is much higher than in the other OECD countries and would appear to be really excessive. In all events, if institutions are to operate more effectively and be managed more efficiently, the average level of qualification among non-teaching staff must be raised. For them too, further training is necessary.

Research staff make up another category. There are 11 000 researchers and 17 000 technicians and auxiliaries in higher education institutions, representing approximately half of all research staff in the country (and 68 per cent of the research budget).[7] The higher education sector's share, particularly that of the public universities and IPN, is thus extremely significant, but the number of researchers is low in comparison with the number of teachers. One especially striking feature, which we have already mentioned, is the degree of separation between teaching and research. Researchers usually teach part-time, generally at post-graduate level, but teachers do very little research, as research units (institutes) and teaching units (schools, faculties) are usually distinct and the notion of someone devoting his time more or less equally to teaching and research has little currency. As a result, research does not exert enough influence on higher education. There is also another separation here: as a rule, teachers do not divide their time between undergraduate teaching and post-graduate courses; post-graduate studies occupy only 10 000 of the 133 000 teachers, comparable to the number of researchers.

The staff pool in the higher education sector is rich in both numbers and experience. However, problems are caused by a certain number of imbalances relating to status, scientific skills and teaching ability, and salaries.

Two types of initiative have been taken in recent years. One involves further training. For teachers and researchers, the starting point was the inadequacy of their academic credentials: only 2.5 per cent of those teaching *licenciatura* courses have a doctorate, while 56 per cent have only the *licenciatura*. The SUPERA programme encourages them to embark on post-graduate courses. Since 1991, CONACYT has offered grants for such studies in Mexico, on courses of recognised quality, and in other countries. This national system is complemented by certain higher education institutions. For administrative staff, the Higher Education Modernisation Fund (FOMES) provides backing for reorganisation projects that include further training.

The other type of initiative has been the adjustment of teachers' salaries according to results, on the responsibility of individual institutions within the framework of flexible national guidelines, with peer reviews being conducted locally. There is a similar system for researchers within the framework of the SNI (*Sistema Nacional de Investigación*), with a national assessment organised by CONACYT. This provides a way of offsetting the fall in salary levels, not across the board, but by rewarding those teachers and researchers who are regarded as the most effective. It

is a considerable change, which many countries could envy Mexico. Implementation should be monitored closely, however, in order to verify, for example, that there is no drift towards the rewarding of seniority, which would further curb mobility.

These two initiatives are complementary and seek to encourage a more professional approach among staff through voluntary and incentive measures. This is without a doubt the best path to follow. The difficulty lies in finding the right balance between rewarding the best and encouraging the others to improve.

It is not easy, for example, to convince staff not employed full-time to devote time and effort to becoming more professional as teachers. We would emphasise that the sole justification for the existence of part-time teachers is to bring in people who already have an outside, non-teaching job, so as to benefit from their experience. Any further recruitment of part-time teachers should be reserved for this case alone, so important in establishing links with the economic sphere, as we have said. For those who currently teach part-time, and sometimes have done so for many years, and give satisfaction but do not meet this condition, an effort should be made to offer them full-time posts in exchange for further training.

The recruitment of new permanent teachers should be reserved for those who have obtained a doctorate or those who, having obtained a master's, are preparing a doctorate. In the latter case, teachers would be recruited only temporarily, but they would be given time to complete their doctoral studies and to undergo additional teacher training. These measures could only be implemented gradually, since they call for an extension of master's and, above all, doctorate programmes. Now is the time to begin thinking about how to replace the teachers recruited in such massive numbers during the 1970s.

For existing teachers, it would seem possible to offer them time to take further training, by managing timetables more efficiently and reducing excessive workloads. They could enter into training agreements setting out the activities to be undertaken, the time given and, possibly, salary increases or promotion possibilities. The promotion system in many institutions needs to be made more transparent and linked more clearly to assessment.[26] However, the acquisition of an academic diploma is not the only way of upgrading skills; existing teachers should not be given the impression that their experience counts for little if they do not have a master's or doctorate, especially when those who devote a lot of energy to acquiring them may sometimes neglect their students. Other methods need to be found of acquiring and validating further skills.[27]

This may take the form of further teacher training with the aim of modernising teaching and learning methods applied in the classroom. We noted that some institutions have set up educational research and training units with this aim in mind, beginning with the UNAM's Teaching Research Centre created in 1969. One problem is the isolation of teacher training colleges and the National Pedagogical

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University, which have skilled teachers in this field. There is also a need for greater teamwork, which seems to be lacking in Mexican educational institutions. The fact that salary bonuses depend on individual performance does nothing to improve the situation: why not create bonuses for teams putting forward projects to increase the effectiveness of their work with students and then proving that they have achieved their objectives?

Research, carried out not for the acquisition of higher degrees but with a view to publications or patents, also has a training value. In many countries it is even the main component of in-service training for higher education teachers. The development of teams of teachers-researchers, sharing their time between these two activities, should thus be encouraged through the allocation of time and research resources, as well as by reconsidering the divide between teaching and research structures: this is a major challenge.

Lastly, institutions should have a duty to organise further training for non-teaching staff, supervised by teachers and senior managerial and technical staff. Likewise, for such senior managerial and technical staff, participation in courses as part-time teachers in their particular areas of professional competence – as we have seen – can also provide an opportunity for refreshment. Finally, rectors, heads of department and their staffs should also be given training in institutional management techniques, organised at national or even international level, such as the training proposed by the Programme on Institutional Management in Higher Education at the OECD.

Unfortunately, if the initiatives taken in recent years and the suggestions we have just made are to reach a sufficiently large target population, additional resources will be needed. More resources will also be required to remedy low salary levels which do nothing to improve motivation and risk driving the best elements out of or away from the profession.

FUNDING

In Mexico, most funding for public higher education institutions is provided from the public purse, with the federal government supplying the bulk and state governments making up the remainder. We shall return in Chapter 4 to the modalities of its allocations. The Higher Education Modernisation Fund (FOMES) was created in 1990, so that part of the federal subsidy (around 7 per cent) could be earmarked for projects relating to eleven nationally defined priority areas,[28] which include many of the proposals put forward in this report. It is an important initiative, though it applies only to the universities. 247 projects were selected in 1994, out of 388 put forward by 50 universities.

The states fund the public universities located on their territory and the few institutes of technology created recently with their backing. They may provide over

half the budget of some institutions, but in general their share is much lower and falling: 24 per cent for state universities in 1992 compared with 27 per cent in 1988, according to the Background Report. Moreover, state government resources are themselves provided by the federal government.

Public institutions have relatively few resources of their own: 8 per cent overall in 1994,[29] 10.5 per cent for state universities in 1992 compared with 6.5 per cent in 1988, 8 per cent for UNAM in 1991 compared with 15 per cent in 1970. One third of the total is derived from payments from students (enrolment fees and other expenses or voluntary contributions), which are traditionally very low or sometimes even non-existent. They are tending to rise in most universities, though each university takes its own decisions on the matter. The question of whether this trend should continue (it would be socially unjust in a country where access to higher education is already limited to a minority) should be examined in connection with the study grants we mentioned earlier.

Private institutions which, as we have said, train only one student in five, are funded privately, although CONACYT may provide some resources for research purposes. FOMES also contributed at one time, though only to a very limited extent.

Higher education resources thus very much depend on the federal budget, which is an uncertain element at a time when the trend is towards a decrease in federal support in all fields. During the 1982 crisis federal support decreased by one third; since then, the recovery has been slow, so that the cost per student remains at the same level and is even somewhat decreasing in the technological institutes where, it has to be recognised, it was relatively high in 1982. The increase in research expenditure has been greater, so that its share in GNP is now the same as in 1982 (0.42 per cent); this allowing for a significant increase in the CONACYT budget over the past five years.

We have already drawn attention to the consequences of financial difficulties on salaries. We should also mention the equipment level of classrooms, sometimes desperately low, laboratories and libraries. The introduction of cost accounting techniques should make it possible to make savings, but they will not be sufficient to meet needs.

In the current economic climate, it does not look as though the necessary input can be expected from the federal government alone. The search for fresh resources should also be linked to closer relations with the economy and society. Continuing education, studies and research for companies and local authorities, participation in local development, all things that we have recommended for other reasons, could provide opportunities for the diversification of funding. Of course, some staff time would have to be devoted to such initiatives, but it should not be impossible to find if timetables and the composition of classes were reviewed.

A COLLECTIVE LEARNING PROCESS

In this chapter we have looked at a certain number of questions that we believe to be vital for the future and suggested several avenues for the renewal of upper secondary and higher education. The main question seems to be the relationship with society; in particular the economy. In this period of transition, education should accompany social and economic changes and help to prevent their undesired consequences. To a large extent it is on such social relevance criteria that quality will be defined and judged. Quality also depends on the competence, motivation, dynamism, energy of the teachers; to provide them with an appropriate status, remuneration and training; sufficient resources should be made available. But an improvement in the level of funding can only be expected if there is a positive judgement on quality and the relationships with society. We have also shown that, to better meet the needs of society and the economy, it will be necessary to introduce more flexibility and responsiveness in the system and diminish its fragmentation and complexity.

Does that imply a reorganisation of the higher education system comparable to the reorganisation we are urging so strongly in the upper-secondary sector? It would be tempting to reply in the affirmative, given the proliferation of sub-systems created in the past on the basis of different traditions – university, technical, educational. Nobody knows, however, whether there exists an ideal system, suited to the future society to which the current transition will lead. Also, can we simply ignore the experience reflected in these traditions? Certainly not, although we know we should not seek models in the past. In a period of rapid change, society has to learn and adapt. Higher education can contribute to this change, if it embarks upon this collective learning process.

We would indeed prefer to talk of a process and not a once-and-for-all reform. It is to this learning process that we have sought to contribute throughout this chapter. Rather than measures edicted *ex cathedra*, we are proposing an inductive approach based on analysis and reflection. Rather than structural transformations, we are suggesting avenues of change, often on the basis of ideas we have encountered or experiments currently being carried out. This means thinking about traditional principles such as autonomy and academic freedom, which should now concentrate more on the 'how' than on a 'what' whose references are external. It also means reconsidering the relationships between public and private institutions and about the recently emphasised notion of federalisation.

Academic freedom is a feature of the professionalisation of teachers, a development whereby 'the implementation of predetermined rules gives way to strategies guided by objectives and an ethic'.[10] This has nothing whatsoever to do with individualism, the rejection of guidance or a refusal of accountability.

As far as autonomy is concerned, there is a deep split between the universities and the institutes of technology. The universities are generally autonomous *de jure*, and all of them are autonomous *de facto*. It gives them a necessary intellectual freedom and great flexibility, but unfortunately it can blind them to their economic and social context and lead them to focus on their own internal problems, thus losing the justification for this flexibility. The institutes of technology, by contrast, depend to a considerable extent on the central authorities, especially in curriculum matters, which encourages the mobility of students and graduates throughout the country; they have barely any possibility of taking their local or regional economic context into account. Both systems have their advantages, but the road to take is that of cautiously bridging the gap between them in such a way as to preserve the advantages of each. We moreover believe that the institutes of technology should be developed as a priority. The teacher training colleges do not seem to have been genuinely integrated into the higher education system, despite the decision to do so taken over ten years ago, and seem to be flagging. Two reasons are their small size and their separation from other institutions, implying a certain degree of isolation for their staff. Three avenues worth exploring are grouping them into multi-disciplinary institutions, attaching them to universities as professional schools like any other and recruiting students at various points of the course.

No consideration of the future of education should ignore the part played by private institutions. Attention could be paid first to the quality of their teaching. As we have said, the best rubs shoulders with the worst; the procedures by which they are currently given recognition are not strict enough. However, we wish to emphasise that private institutions have been able to develop different approaches and a different mindset from those of many public institutions. This diversity is just as valuable as those of the university, technological or educational traditions. What concerns us more is the widening gap between the best private institutions and many public institutions, in terms of prestige and adaptation to employment. If anything, this gap needs to be narrowed, in particular by using strategic funding made available to both types of institution.

Federalisation offers another way of reconciling local flexibility with national rules, within the framework of relations with the surrounding society. Many measures could be taken as of now, and a start could be made by asking the various institutions within the same state to co-ordinate their activities. They could then go on to define a common policy for admissions and for meeting economic and social needs, areas where achievements so far have been very uneven between states. The question of the special status of the Federal District, where one-fourth of the population and the student-body, even more for *posgrado* and research, are to be found, is bound to arise here.

A learning process such as the one upon which the higher education sector must embark can succeed only if it is properly steered. This is doubtless what was

missing during the growth period. It is up to the public authorities, at both federal and state level, to provide steering and ensure continuity; the budget gives them an instrument for doing so. Consideration must be given to the conditions under which steering is carried out, bringing together planning, resource allocation, assessment and the circulation of information. That will be the subject of the following chapter.

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4

STEERING THE SYSTEM

Steering the system means leading the players involved on a converging path towards a national policy that needs to be defined so that upper secondary and higher education meet the country's requirements.

THE PLAYERS

Article 3 of the Constitution sets out powers and obligations in educational matters, especially those of the public authorities – the federation, the states and the municipalities – referred to collectively as the State (not to be confused with the states that make up the federation). A difference is made between basic education, which the State provides (the verb used in Spanish is *impartir*), and "other types and forms of education – including higher education" – which it "promotes" (*promover*) and "attends to" (*atender*). Higher education is thus mentioned only parenthetically, while no explicit mention at all is made of upper secondary education. Likewise the General Law on Education deals hardly at all with these levels, except as regards the training of teachers for basic education.

In fact, the federal government is primarily responsible for public higher education. To begin with, the most important and most prestigious institutions are located in the Federal District: the "N" in UNAM and IPN stands for "national". And although universities were founded in the states as early as 1917, it was the beginning of a period which was to see the centralisation of the country. As we have said, most funding is federal, even though there are some exceptions where state government contributions may represent about one half an institution's budget. In all events, state government resources are derived from the federation and the states have little freedom as to their allocation, at least in theory.

The federation thus has a strength, in that it contributes the bulk of the higher education sector's financial resources. But it also has a weakness: in view of the universities' autonomy [1], it can exert direct influence only over the technological sector and, with the states, over teacher training colleges. Moreover, in view of the share taken by private education, the public authorities' direct influence extends to not even one student in five in higher education and approximately one pupil in three in upper secondary education; even then, institutions like the National

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Polytechnic Institute described as "deconcentrated" and the CONALEP described as "decentralised" seem to enjoy a considerable degree of *de facto* autonomy.

University autonomy exists in many countries. It is related to the traditional notion of higher education which, creating knowledge, cannot be subject to political or administrative authority. In periods of change, it allows for initiative and invention. In Mexico, however, the construction put on this concept is particularly broad and occupies a particularly prominent position in people's minds, perhaps in response to the power of the federal government. UNAM obtained its autonomy in 1929 after a wave of student protest. The notion of autonomy is defined in Article 3 of the Constitution and it has been defended successfully by the universities in the past against what they regarded as encroachments by federal or state government (as with the university of Nuevo León in the early 1970s, which opposed the creation of partnerships in particular). The 1978 law on the coordination of higher education said nothing about a coordination of the public universities because some considered it could have been in breach of the principle of autonomy, nor does this law cover private institutions. The universities, and the higher education institutions in general, are thus central to the system. They organise their own coordination themselves through an association, the ANUIES.

Other players are beginning to emerge, however, ending the bipartite relations between the federal government and the institutions.

Federalisation gives the states a more important role. In his message to Congress on 1 September 1995, the President announced his intention to extend federalisation to post-compulsory education. The way has thus been shown, and it is necessary in order to root educational institutions more firmly in their economic and social environment, taking into account the country's vast differences. We believe, however, that the process can only be cautious and gradual and that, to use the term we employed in the previous chapter, it must be a learning experience. Not all the states are equally ready and often lack the staff to whom higher education institutions can talk on an equal footing. Moreover, federalisation must be an opportunity for reducing geographical inequalities and not widening them still further. Lastly, a higher education institution cannot be enclosed within a geographical area: graduates must be able to move throughout the whole country and beyond, while the scientific community in any discipline is international by nature.

Other players are to be found in Mexican society. It may be supposed that, as in many other countries, the consumerism that accompanies the economic and social changes currently taking place will extend into the educational sphere and that students and their families will no longer be satisfied with mere entry into higher education but will expect teachers and institutions to be accountable, especially if the trend towards higher enrolment fees continues. The favour currently enjoyed by the private sector is significant of this attitude. Not only the users themselves but society as a whole is beginning to demand relevance and efficiency

in education. In the first place this is just a consequence of the higher education sector's success and the place it has taken in society, but it is also the result of a new awareness of its importance for economic development. The purpose and identity of higher education are in question, and the sector can no longer define them in isolation.

The problem today is how to bring together all these players – federal government, state governments, institutions, society, business and industry – in defining and then pursuing a policy. Another problem is how to decide, without taboos, who is or should be responsible for what. One tempting answer in the current environment would be to argue in terms of competition and to turn post-compulsory education into a marketplace, emphasising the institutions' autonomy and responsibility. We do not believe that such a policy is viable, not only because the outlook for education, and investment in the education system, call for a long-term view, but also for reasons that are more specifically related to Mexico itself.

Of course, higher education institutions are in competition. They compete for students. But in the public sector at any rate these are not the ones who pay, or at least not much. Furthermore, the situation is not one of an abundance of places but rather of a shortage, so that students do not choose but are chosen, except for the richest, who head for the private sector, and perhaps in the public sector the most gifted. This is hardly fair and is becoming less and less acceptable to society at large.

The public institutions are also in competition for the financial resources allocated by the federation and by the state on which they depend, which between them provide almost their entire budget. That is as far as their autonomy goes. Competition becomes fiercer when resources are scarce. However, higher education is not a market either, since there is a single customer and that customer is far from being concerned exclusively with finding the best service at the lowest price. For years, resources were handed over without the slightest say in how they were used. Today institutional leaders complain that financial decisions are taken according to rules that escape them, related more to the way things have always been done or political clout. In a nutshell, this kind of competition does not help them to get on. In recent years, however, the federal government, through the FOMES which we have mentioned earlier, has begun to introduce incentives in some areas.

Rather than encouraging competition, the aim should be to harness the efforts of all institutions in precise directions, to concentrate resources on national priorities, to carry out structural changes. These will be the main charges of federal government in the years to come. This is what we mean by "steering", a term which could be misunderstood if it were given an overly directive connotation. It means treating projects and initiatives put forward by institutions with respect, it means prompting them, encouraging them and ensuring that they are circulated, provided that their objectives and results are in line with national policy. Within this

responsibility, which must assume a more strategic cast, two levels begin to emerge which we shall look at in turn: framing policy, which calls first and foremost for ongoing consultation between all players, and implementing policy, at which point it becomes important to distinguish who is responsible for what.

FRAMING A NATIONAL POLICY

Many of those we met expressed an urgent demand for a policy that was both clear and long-term, and such a policy would indeed be a response to the various crises affecting the higher education, as indicated in Chapter 1.

Strategic studies

One precondition for framing a policy is the availability of information to base it on. We found that comprehensive statistics on numbers in basic education are available in Mexico and that they are in fact better than in many other countries, especially in view of the difficulty of gathering information about scattered populations with highly uncertain enrolment rates. Information about higher education, on the other hand, appeared to be more limited and less reliable, showing substantial variations depending on the source. This is partly due to the autonomy of the universities, which leads to different organisational structures and difficulties in gathering and collecting data. Statistics are generally limited to total numbers to be taken into account in allocating resources, which is not perhaps the best guarantee of their reliability.

However, if the aim is now to engage in forward and strategic planning it is necessary to collect information about student pathways. We have already mentioned the dropout rate, about which it is difficult to obtain anything but the most rudimentary information. During our visits we were also struck by the number of students who had changed courses, often losing the benefit of what they had acquired up to that point, but we were unable to obtain any figures. Another shortcoming concerned transfer rates between upper secondary and higher education: only overall figures exist here, and even they must be treated with caution since the definition of new enrolments is far from clear. There were no figures at all, for example, on the proportion of pupils with technological *bachilleratos* going on to university or on the total number of candidates for entry into higher (or upper secondary) education, despite the fact that it is politically important. Emphasis should thus be placed on data and studies concerning transfer rates at the end of each year, flows and pathways. There is no need for comprehensive figures here; it may be enough simply to track representative samples.

Leaving aside information about the internal workings of the system, external factors and their interpretation are at the heart of any strategy. Although demographic factors are taken into account, there is no comprehensive information

whatsoever on the social origin of students. Some limited studies of what happens to graduates after leaving have been carried out, but they have not applied any national methodology and have focused exclusively on graduates, ignoring those who drop out before completing their studies. We are aware that the parameters of an information system on employment destinations are currently being studied, and that the OECD has sought to facilitate this work and could contribute towards its implementation. More generally, we regard the creation of a system for tracking links between training and employment as a priority. There is in any case one area where the SEP is responsible for drawing up forecasts and that is the recruitment of teachers for the basic education sector.

As regards funding, the difficulty we had in forming an opinion on the total amounts devoted to higher education and how they have varied over time, the lack of comprehensive statistics on how funds are used and the contradictions between the various sources suggest that a considerable amount of clarification is needed.

Thus, we believe that the forward and strategic planning that we so urgently recommend will be possible only if a statistical and forecasting unit is set up whose competence and independence are irreproachable. The National System of Information on Higher Education, which currently brings together the SEP and ANUIES, could prefigure such a unit. Apart from data processing and statistical skills, such a unit should include members with experience of employment issues, trend analysis and social aspirations and a broad view of the purposes served by education. It should also be able to commission studies carried out by research teams: although educational research is alive and well in Mexico, we feel that the proportion devoted to post-compulsory education is insufficient. Moreover, a rapid review of existing studies suggests that they are insufficiently based on quantitative elements, doubtless because appropriate statistics do not exist.

Consultation and planning

Statistics and forecasts merely provide a basis for planning, however, and there needs to be a forum where consultation leading to the framing of policy can take place. Of course there are a large number of bodies which could meet this definition: we noted at least ten at national level, not to mention those created at the level of individual states or regions grouping together several states. The present status of these bodies is very different: some are dormant or have never really functioned. It would doubtless be worthwhile to simplify what appears to be another highly complex area.

The first notable feature is that most of these bodies cover only a part of post-compulsory education. For example, there is a Council of the National System of Technological Education (COSNET) and a Teacher Training Council, set up by law, in the upper secondary sector, a National Planning and Curriculum Development

Coordination and a National Commission; in the research sector, the CONACYT which has operational responsibilities and a Science Advisory Council reporting to the President. Other organisations are non-profit associations and hence have no official status, though that does not mean they are any the less important: they include ANUIES, a forum grouping together all the public universities and a certain number of other institutions, and FIMPES, the private institutions' association.

Another feature is that these bodies do not include all the players involved. In recent years the impetus behind a number of important decisions involving the universities above all has come from the CONPES, the National Higher Education Planning Coordination, created in 1979. It is not a body as such but a "coordination", *i.e.*, a forum where a certain number of decision-takers, such as the Secretary for Public Education and his senior officials, representatives of the Secretariat for Finance and the board of ANUIES, can negotiate according to needs. The existence of such a body for seeking consensus bears witness to the importance of university autonomy. However, it does not include representatives from either state authorities or the economic and social spheres. Similar structures have been set up in the states (COEPES) and regions (CORPES), but few function effectively, another pointer to the problems of the federalisation process.

Another body to attract our attention was the National Higher Education Standing Planning System (SINAPPES). However, we are unclear as to whether this "system" includes the CONPES and its state and regional equivalents or whether it is liable to work on their behalf by setting up information, planning and assessment units. On this last point, CONPES was behind the creation of CONAEVA for the assessment of institutions, CIEES for the assessment of curricula and CENEVAL for the assessment of students. However that may be, SINAPPES seems gradually to have retreated into the shadows.

A National Development Plan was recently published, in which higher education was accorded only a small place. On this basis, the Secretariat for Public Education has developed a work programme for the next five years, containing a section for upper secondary and higher education. It was drawn up after lengthy in-depth consultation but it commits only the SEP and, as far as the institutions are concerned, has only information or incentive status.

Several important ideas emerge from this review of consultation, assessment and planning bodies:

- planning is essential in Mexico, where a large number of players are involved in post-compulsory education but most of the funding is provided from the public purse;
- planning must cover the entire sector and not just one or another sub-system or level.

- planning must be long-term and on-going: it must take account of educational time horizons (*i.e.* around ten years) and then be updated periodically;
- planning cannot be carried out by the federal government alone: all the players must take part (*i.e.* federation, states, higher education institutions, to which list we would add representatives from society in general and from enterprises in particular).

Consequently, one could envisage the creation of a National Council whose remit would extend to the entire post-compulsory education sector. Its objectives would be overall assessment and strategic planning, on a ten-year basis but continually updated, especially as regards flows of students in each major sector, staffing and financial resources, but also embracing more qualitative aspects. It would also inevitably have to take an interest in what happens further downstream, at the point of entry into professional life. Its remit could also include research, or it could work in liaison with parallel bodies in this area, but we are not in a position to come to a conclusion on this point. Its members would be drawn from three constituencies: personalities appointed by the President from the world of higher education and from society as a whole, especially employers' and workers' representatives; representatives chosen by the states; members of the federal government. It would report to the President but its members' terms of office would not coincide the President's.

Such a body could acquire great authority, even if it had no decision-taking powers, provided that its proposals and reports were submitted to the President and had to be debated periodically in Parliament. One of its first tasks could be to prepare a framework law which would set out the tasks of higher education, the major objectives to be achieved and certain organisational principles in the new economic and political context. However, if it is to be effective, the various partners would have to put in a considerable amount of preparatory work. This is true in particular of the states: each one would have to prepare its own plans, and they could create a forum in which they could discuss their higher education policies and review their relations with the federation in this area.

It is not for us to make specific comments on planning guidelines concerning numbers of pupils and students. However, we would like to stress certain general principles which summarise ideas and recommendations mentioned earlier:

- for upper secondary education, admitting all candidates capable of benefiting from it, increasing the proportion of vocational and technological courses with the initial aim of achieving one-third of the total;
- for the *licenciatura*, aiming to increase numbers in the medium term, though controlling them through entrance and exit tests, while seeking a substantial reduction in the dropout rate and matching these aims with the necessary resources in terms of qualified staff and funding.

- at *posgrado* level, increasing the number of graduates preparing master's and doctorates in order to pave the way for new recruitment into higher education and improve the skills of existing teachers;
- in higher education, developing institutes of technology and technological universities as a priority, introducing and developing intermediate exit points;
- drawing up a recruitment plan for teachers in basic education and taking it into consideration for teacher training intakes.

A National Council, backed up by a statistical and forecasting unit, should thus be able to propose a long-term policy, to be decided subsequently by the federal authorities. It then remains to implement it.

IMPLEMENTATION

From our point of view, there is a considerable difference between the situation in the upper secondary sector and the situation in the higher education sector and we shall examine the two levels separately. As far as the upper secondary sector is concerned, there is no justification for autonomy, as we mentioned in Chapter 2, and we recommend the creation of a national system with its own characteristics, as in other countries. In the higher education sector, in contrast, institutional autonomy should be respected, as in most countries, but also redefined. It has to serve the policy framed at federal level.

A national system of upper secondary education

Setting up a national system means first a commitment on the part of the public authorities to accommodate all young people able to benefit from this type of education, without taking refuge behind the autonomy of this or that institution. We do not believe that there is any reason to limit the number of places, in view of the country's need for middle-level managers and technicians. The only limits should apply to the knowledge and abilities deemed to be necessary; in other words, there should perhaps be an entrance exam but not a competition. Therefore numbers will doubtless rise and the available resources should be used as fairly and as efficiently as possible.

Structures and admission procedures should be the same for all young people everywhere. They would therefore be determined at federal level and, in order to demonstrate the importance, uniqueness and coherence of this level of education, responsibility for the sector should be given to a specific under-secretariat whose remit would extend to both general and technical streams. Curricula would also be determined at federal level so as to allow geographical mobility, as has already been the case with the *Colegio de bachilleres*. Higher education institutions would

contribute their experience in these matters, but representatives from the economic sphere would also take part.

The states would be responsible for actual provision, the aim being to ensure that access is fair and that enough places are available. Regional development aspects and equal access in this area are doubtless best left with the states. This does not, however, solve the problem of the Federal District, where more awkward questions of competition exist.

The states would run their own high schools or enter into contractual arrangements for educational provision with existing institutions. These institutions could include higher education institutions if the state government felt that they represented the best means of providing high quality upper secondary education. Although this is not a fundamental task of such institutions and although their participation in this field should gradually be reduced, it could be a way of involving them in the definition of methods and the training of teachers for the state as a whole. Again, the idea is not to destroy an elite – in this case the best schools and courses – but to place them at the service of all.

A higher education system and how to steer it

Autonomy is an opportunity, at a time when invention is especially necessary, but the concept is not immutable. It has to be adapted to a new context and new objectives, to improve equity, facilitate the mobility of students and staff, the circulation of ideas and compliance with a national policy, for example. The aim is to avoid arriving at a situation where the nation deemed it necessary to increase student flows but each university decided to cut its intake.

More generally, we have already referred to the disadvantages of the current state of complexity. Here again, a genuine system needs to be created. Of course, such a system should be differentiated, if anything rather more than at present, but it should avoid the barriers that prevent mobility and hinder effective steering. As we said at the end of Chapter 3, rather than proposing major legal changes we have preferred to outline a few avenues of reform. These include making all public institutions, and in particular the institutes of technology, more autonomous in their administration; bridging the gap between teacher training colleges and the rest of the higher education sector; encouraging public universities to evolve and to support a national policy; encouraging private institutions to participate in that policy and tightening up the recognition procedure. The aim should be to move towards a genuine network of differentiated institutions, some of which are able to play a specific role in the service of the entire system.

The differentiation, as used here, however, does not refer only or principally to legal or administrative distinctions. Rather, it concerns the nature of the activities within each institution. For example, we have argued for more differentiation among

courses of study, some being more vocationally-oriented and more practical, other more academic. We expressed a similar view about research, namely to give each institution the possibility to establish its own identity. However, differentiation does not mean confusion; there should also be attention to the need to pursue or increase the mobility of people and ideas. One could then think of three or four models of institution, each of them serving as the basis for a network.

A network needs steering, in our understanding of the word. It means encouraging and backing initiatives that comply with national policy and then making sure that they are circulated. In a nutshell, it means ensuring coherence. That is in our opinion the SEP's prime responsibility in the higher education sector. The introduction of a system without barriers goes hand in hand with the recommendation that a single under-secretariat should be responsible for all higher education institutions (universities, technological institutes and teacher training schools), acting as the sole interlocutor for all institutions, including the universities in the Federal District.

A single coherent system also goes hand in hand with common steering tools. We have already mentioned a number of these, such as the assessment of institutions, which we referred to in Chapter 3; accreditation of courses and institutions, which we also talked about earlier, the benchmark for which should be the main options of national policy; the provision of information to the various players, including the general public, making use in particular of the statistical and forecasting unit we recommended setting up. We shall introduce two more here: the allocation of financial resources, in ways that we shall examine in greater detail below, and the conclusion of an individualised multi-year agreement between each institution and the public authorities, setting out how the institution is to implement national policy. These tasks are inter-related: for example, evaluation is a basis for accreditation; both of them provide information for the general public, but are also a basis for financial decisions, for which provision can also be made in the agreement. Both evaluation and strategic studies provide needed information for the design of a national policy.

These interactions pose the problem of the administrative and financial arrangements for assessment bodies, accreditation agencies and the statistical and forecasting unit. Attaching them to the SEP alone may raise doubts about their independence: they could be created and operate, with a large measure of independence, under the joint authority of the Secretary for Public Education and the National Council proposed above.

The federal resources allocated to higher education are currently reserved for public institutions and are distributed in two separate ways. One, accounting for 90 per cent of the budget, determines a basic subsidy; the other, representing a much smaller share, is allocated within the framework of the Higher Education Modernisation Fund (FOMES), about which we spoke in Chapter 3. The basic

subsidy is calculated according to rules that are described as strict by SEP officials and as utterly opaque by the institutions, especially the universities. Historical factors and the clout of rectors seem to play a significant part. Moreover, a few large institutions negotiate directly with the Secretariat for Finance. This does not look like a very suitable instrument for steering. The FOMES, by contrast, affords an attractive opportunity which has enabled considerable progress to be made; it is also an initiative that most of those we met regarded as important. It is perhaps regrettable that it has so far applied only to the universities, and this is yet another example of the drawbacks of the barriers between sub-systems. It is also heavily constrained by the chosen areas of action, with the result that it does not encourage initiative on the part of institutions.

While retaining the broad framework of this method of allocation, improvements could nevertheless be made in a number of areas. The coexistence of the two funding methods seems to be appropriate, and it should be extended to the institutes of technology and teacher training colleges. However, we believe it essential that the basic subsidy should be calculated according to clearly stated arithmetical rules, identical for all public institutions. The factors used in the calculation should include student numbers and results in terms of diplomas, but only accredited courses would be taken into consideration. We are naturally aware that it is impossible to make sudden and large changes given the importance of salaries in the budget, but that should not prevent transparency.

As regards the second part, where there are no automatic rules, we suggest that rather than issuing an annual call for tender based on rigid items, provision for funding should be made in a multi-year agreement concluded with the institution. The agreement could be in three sections: the first would recapitulate the specific services rendered by the institution (it is in this section, for example, that the existence of a National Library at UNAM would be taken into account); in the second, the institution would undertake to implement a certain number of measures in connection with the national higher education policy, such as those we recommended in Chapter 3; the third would provide backing for projects put forward by the institution. Results would be assessed on expiry of the agreement before concluding a new one. This type of agreement, and the funding that goes with it, should also be available to private institutions. All this would be possible only if the second part of the budget were increased in relation to the part devoted to basic subsidies. This would justify an increase in the overall higher education budget, entirely devoted to contractual arrangements in a similar way to the initiative launched in 1989.

The states also provide funding, but in very different ways. Here again, historical factors are important and there is an almost complete lack of transparency. It would seem that federal subsidies fall as state subsidies rise, which is hardly encouraging when state funding should be increased. We believe that the basic

federal subsidy should be independent of any state funding. As regards the multi-year agreement, the state concerned could be a partner and make a contribution. Such arrangements would enable each state to promote coordination between the institutions on its territory. However, we should be highly cautious about these aspects relating to federalisation because such proposals have little chance of success unless the states are endowed with their own resources and can freely decide how to allocate them.

The internal steering of higher education institutions

Ultimately, higher education policy will be implemented in and by the institutions themselves and the quality of their internal operations is thus vitally important. We saw during our visits that discussions on internal structures had begun in many institutions. It is difficult to make any generalisations, however, because the organisation, government and administration of institutions varies enormously according to their type and size. What can a recent institution with a few hundred students have in common with UNAM which could be regarded as a system in itself, with its own differently organised sub-systems? We shall have to be satisfied here with a few broad principles.

An institution's organisation should be at the service of an action corresponding to the three features that have emerged from our analysis: meeting the needs of national and local society; taking its place in an international environment; operating within a national higher education network. These three features can be summed up in the word *openness* and they require mobility of both people and ideas. Four examples of initiatives to promote greater mobility have already been given: the presence of representatives from the social and economic sphere on the various bodies of institutions, the introduction of a credit system in order to encourage student mobility, the development of post-graduate courses and research centres by way of agreements between institutions and the recruitment of teachers with other skills and experience. Society is changing, and meeting its needs calls for flexibility, as we mentioned in Chapter 3. From an organisational standpoint, this may be reflected by calling into question the rigid "vertical" distinction between schools or faculties where particular subjects are taught and research institutes. A "departmental" structure appears to be better suited to current needs, even if it is not necessarily an ideal model for all circumstances (especially for smaller institutions).

However, greater openness and flexibility must not be achieved at the expense of an institution's unity and identity. In particular, a university's having too much autonomy could be harmful to its teaching and research units. There is no criterion of maximum size for a university; the criterion is rather that of a common action and

shared identity. We can but urge institutions to define their identity more clearly and affirm those aspects which differentiate them from others.

One way of reconciling this affirmation of identity with greater openness, both to the outside world and to change, is for an institution to set out its policy in a document, a project or a plan, deriving not just from the rector but from the institution as a whole. This means that it should have the approval of the governing body and be familiar to the members of the institution and its partners. It should define medium-term objectives on the basis of an assessment of the situation with reference to national policy, identify strategic priorities and set out specific plans of action. It should serve as a basis for concluding an agreement with the public authorities.

The same steering instruments are used for implementing projects as were already mentioned in a broader context:

- assessment, not only before drawing up the project but also for monitoring its implementation: we have already said that an "assessment culture" is beginning to spread through Mexico's higher education sector, but we cannot rule out the possibility that it might sometimes be accompanied by a certain degree of pretence;
- accreditation of courses and teaching and research units by an outside body with the participation of representatives from outside the academic sphere;
- provision of information, concerning the institution itself (current information systems have definite shortcomings, especially as regards budgetary and accounting controls and tracking students after they gain their diploma or drop out), and concerning actual and potential students (we have already mentioned the importance of advisory and guidance services, especially as student pathways become more flexible and internal and external mobility increases);
- distribution of financial and human resources: the present system is not always terribly clear, or in accord with the thrust of the desired policy; even less so is it an instrument of that policy. Here again, there is insufficient mobility at all levels; here again, on the basis of the institution's project, a contractual approach to the units that make up the institution could be explored.

5

RECOMMENDATIONS

It is customary practice in OECD reviews that an open exchange of views on the main issues takes place among the examiners, the national authorities concerned and delegates from Member countries. The purpose of the exchange is to pursue the review team's recommendations regarding major policy challenges in greater depth.

A number of proposals have been made in the preceding chapters. Out of their context there may be a risk that they be misunderstood. However, we have summarised them here for the sake of convenience, grouping them around a few ideas which could guide future changes in upper secondary and higher education. Many suggest directions for change rather than detailed measures, which the Mexican authorities will have to design. Also, we know that the implementation of these recommendations often presupposes that preliminary conditions or changes are met or implemented. It would be useful to set them in the context of the following questions:

- To what extent does each of these recommendations reflect a real and urgent need for the development and renewal of post-compulsory education in Mexico?
- To what extent can and should the proposed solutions be implemented in the short, middle and/or long term? Which alternatives or complements to these solutions might be envisaged?
- What practical problems and difficulties to be overcome might be expected in the realisation of each of the recommendations, and what unintended consequences might they imply?[32]

QUANTITATIVE PRIORITIES

In order to identify these priorities, we need to consider the entire post-compulsory education system as a whole and, taking budget limitations into

account, identify the sectors where consolidation is needed and those which need to be developed.

- For the upper secondary sector, a rise in demand should be expected; the share of vocational and technological training and education should be increased, initially to one third of the total.
- For the higher education sector, a rise in demand should be expected in the medium term, provided any such increase is controlled by tests on entering and leaving the system, steps are taken to achieve a substantial reduction in the dropout rate and the necessary financial resources and skilled staff are made available.
- Institutes of technology and technological universities should be developed as a priority.
- A recruitment plan for basic education teachers should be drawn up and taken into account for teacher training college intakes.
- The number of post-graduate students should be increased so as to prepare for future recruitment into higher education and enable current staff to improve their skills; to this end, networks of institutions should be set up, with a special role being given to federal level institutions.

EQUITY

The system in its present state only benefits a restricted number of students, many others dropping out before completing a course of study. Given current levels of development, access to the entire range of provision needs to be governed by a few major principles. In particular, greater equality of opportunity should be sought, in both geographical and social terms.

- All candidates capable of benefiting from upper secondary education should be admitted. Steps should be taken to ensure that candidates with the same level of attainment should enjoy the same opportunities of access to the courses of their choice.
- For all candidates entering higher education, a selective admissions procedure should be introduced, based on an exam and on *bachillerato* results, in order to control inputs into the various streams according to candidates' quality and an assessment of employment opportunities. Institutions should be encouraged to group together in order to organise the admissions procedure.
- Tutorial and guidance services should be expanded in both the upper secondary and higher education sectors.
- The student grant system should be considerably extended; the principle should be that no young person acknowledged to be suitable for upper

secondary or higher education should be prevented from entering because of financial difficulties.

- Statistics on the social origin of students should be kept.

RELEVANCE

For historical reasons the system generally functions independently of its social context. The relevance of courses can only improve as links with the economy, and with society as a whole, are strengthened, in upper secondary and higher education. There is a need to ensure that all sectors of economic and social life, not only the larger firms, are associated.

- Representatives from the economic and social spheres should sit on the various instances of higher education institutions.
- Curricula should be defined in co-operation with business and industry within the framework of national standing committees – one for each professional branch – made up of representatives of the profession concerned and teachers.
- Institutions should be encouraged to carry out work, such as studies, research, projects, continuing education, etc., on behalf of companies. For institutes of technology, the regulatory barriers to such initiatives should be removed. Institutions should be encouraged to become involved in local economic development and to train entrepreneurs and business leaders.
- Persons already employed in companies or administrative agencies should be recruited into part-time posts. For permanent posts in institutes of technology, preference should be given to persons with appropriate professional experience.
- Work experience training should be introduced for students as part of the curriculum, with companies being offered a financial incentive to take on trainees.
- Student social service should be overhauled so that it is undertaken among less-favoured populations. Supervisors should be trained and local schemes for projects with possible target populations should be drawn up in collaboration between educational institutions and state administrations.

DIFFERENTIATION AND FLEXIBILITY

The needs of society, and in particular the ongoing changes affecting employment opportunities, call for a greater variety of provision, a diversification of exit levels and greater student mobility, both geographical and as regards their studies. This should help to make pathways more flexible and develop intermediate exit

levels in the context of graded studies, accessible for initial or continuing education.

- *Licenciatura* studies should be made more flexible. Specialisation should be gradual, and there should be an element of common knowledge and skills (data processing, economics, languages), in the form either of a common core or of modules tailored more specifically to each stream. A system of credits should be introduced.
- In particular, a reform of teacher training colleges should be prepared, bringing them closer to the universities and enabling students to move from one to the other.
- The duration of *licenciatura* studies should be adapted to each student's pace of learning. On average it should be decreased.
- The advanced technician level, situated between the *bachillerato* and *licenciatura*, should be expanded considerably, either within the framework of existing institutions, especially in the technological sector, or in new institutions such as the technological universities.
- Provision should be made for the possibility of advancing from one level of qualification to another. Sequential courses at several levels (*capacitación*), technician (upper secondary level), advanced technician, professional (post-graduate) should be introduced accordingly.
- Progression through these courses should be facilitated in the context of recurrent education. More generally, continuing education should be expanded and higher education institutions and staff encouraged to contribute.

QUALITY

After a period of rapid expansion in numbers, quality is now becoming an increasingly prevalent concern. The first step consists in being able to ensure quality, above all that of diplomas awarded, by means of incontrovertible assessments. Further measures can then be taken to improve quality, and in particular to reduce the number of failures and dropouts.

- National benchmarks for knowledge and skills in each stream should be defined and students should be assessed against them. The CENEVAL's work should be given long-term backing.
- The policy of assessing higher education institutions should be pursued and representatives from the professions, business and industry should be brought in.
- A national accreditation system for institutions and programmes should be introduced.

- The reliability of end-of-semester and end-of-cycle student assessments should be improved, in particular by means of objective exams designed by a team of teachers, so that assessment is not left with only one teacher.
- At national and institutional level, the destinations of students dropping out or completing their studies should be monitored and the causes for dropping out studied.
- For the award of the *licenciatura*, all additional requirements after the final validation following the last period of teaching should be removed, with the exception of social service.

STAFF DEVELOPMENT

Staff have done a great deal to ensure quantitative growth in upper secondary and higher education. However, improvement in quality and implementation of the necessary changes can only be achieved through new recruitment, career and in-service training policies.

- A national framework for teachers should be introduced, encouraging mobility between institutions.
- Training agreements should be concluded with existing staff, setting out activities to be undertaken, both in teaching and research, the amount of time granted and, where appropriate, any salary bonus or promotion opportunity. Educational research units should be set up. Promotion criteria should be made clearer in all institutions and promotion linked more closely to assessment.
- New full-time posts should be reserved, as far as possible, for candidates with a doctorate or candidates with a master's who are preparing a doctorate. In the latter case, the appointment would be temporary but teachers would be given time to complete their doctoral studies and undertake teacher training.
- All new part-time posts should be reserved for persons already employed outside the education system, with a professional competence and experience on which to base their teaching. Existing teachers who do not meet this condition should be offered full-time posts in exchange for further training.
- Application of the salary incentive system should be monitored and extended, ensuring that there is no drift towards the award of incentives on the basis of seniority. Teamwork should be encouraged, and the salary incentive scheme should be extended to teams of teachers. The creation of teams of teachers and researchers should be encouraged and the separation between research and teaching should be reviewed.
- Non-teaching staff should be offered more in-service training.

FINANCIAL RESOURCES

Public institutions receive most of their resources from federal authorities. However, allocation criteria are neither clear nor public. In addition, although a higher level of public subsidy seems essential, higher education institutions can no longer continue to live on such resources alone. They will therefore have to seek fresh sources of funding by strengthening their links with the economy and with society.

- The procedure for allocating federal resources to institutions should be reviewed. A pre-determined part should be allocated according to simple, arithmetic rules; the multi-year agreement, recommended below, should include provisions concerning the other part.
- The level of resources derived from continuing education, studies and research for companies and local authorities and from participation in local development should be substantially increased. Some staff time should be devoted to these activities.
- An increase in student fees should be considered, at the same time as extending the student grant system.

STRUCTURE AND PILOTING OF THE SYSTEM

How to provide incentives for the players to act in line with a national education policy to meet the needs of the country? This involves measures concerning the federal authorities, the States, the institutions as well as their mutual relationship.

The federal organisation

- The quality of statistics should be improved and more detailed information should be collected concerning student pathways and careers, the causes of dropouts and the cost of educational provision. A statistical and forecasting unit for post-compulsory education should be set up. Research into the subject should be expanded.
- A National Council covering the entire post-compulsory education system should be set up. Consisting of high-level personalities, representatives chosen by the states and members of the federal government, its remit would cover overall assessment and strategic planning.
- A convergence between the sub-systems should be ensured, at upper secondary and higher level; in the future the structure of the SEP should be overhauled, with the creation of one Under-Secretariat for all upper secondary education and one for all higher education.

The system and the institutions

- A national upper secondary education system should be created, able to accommodate all candidates capable of benefiting from it, with its own objectives and common rules. These rules should be laid down at federal level. Responsibility for implementation should be given to the states, who could transfer such responsibility at a practical level to various institutions on a contractual basis.
- Higher education institutions should be encouraged to review their internal structures so as to group together professional schools, foster closer links between teaching and research units, extend teachers' scope of activity and allow them to undertake research.
- Institutes of technology should be given greater autonomy to encourage them to adapt to the demands of local development, while preserving the national nature of their diplomas, to develop their service activities, to conclude agreements with enterprises and local authorities. The possibility of grouping teacher training colleges into multi-disciplinary institutions, or attaching them to a university should be explored.
- Each institution should be asked to set out its policy in a project, including in particular its pedagogical options, drawn up after consultation and made known to staff and students alike. The project would serve in particular for the distribution of resources within the institution.
- A multi-year agreement should be concluded between the SEP, each institution and, where appropriate, the state in which the institution is situated, setting out how the institution intends to implement national policy within the framework of its project.
- The recognition procedure for private institutions should be tightened up; they should be associated with the national strategy by opening the possibility to conclude agreements with them on the implementation of training and research activities.

6

CONCLUSION

This report was drafted on the basis of our visits and discussions in Mexico. It also draws on a considerable volume of written material, too large to list in detail here, and on our knowledge and experience of other countries.

We have not sought to be exhaustive because that would have meant discussing things which, for various reasons, we were unable to explore in depth. The report refers to several points which we would have liked to study in greater detail, not least among them the question of financial resources. Although we are aware of the importance of financial issues, and although we believe that it would be desirable for the country to devote more resources to post-compulsory education, we were unable to gather enough information to take a position with regard to the share of national wealth that it would be necessary and possible to allocate.

Another point we were unable to raise concerns cultural action which, with teaching and research, is identified explicitly as the third of the higher education sector's tasks in Mexico, and which plays an important role in its relations with society. We were fortunate enough to see some remarkable initiatives in this field. Also, we did not have time to gain a sufficiently clear picture of libraries, although they are essential to each of these three tasks and represent in particular a tool for an overhaul of teaching methods that is greatly to be desired, giving students more initiative with regard to their own learning.

Other tools, such as computers, databases and networks, fall within the province of what is known as the new information technologies. They can contribute to many of the options we have outlined. They can help to expand continuing education, by means of distance learning; they can contribute to staff in-service training; they can help to break down barriers between institutions, encourage international openness and improve the management of the system. The Background Report mentions these aspects and we are aware that part of the FOMES is earmarked for them. Our impression, however, though doubtless rather superficial, is again of dispersion and of a lack of coordination.

We have just mentioned international openness. This is another subject that we have been able to do no more than touch on despite the fact that it has always been essential for higher education and that it is becoming increasingly important

in a context of globalisation. We were able to observe, however, that higher education institutions are devoting a great deal of effort to this aspect.

Upper secondary and higher education have to evolve for two reasons. First, the scale of their past growth gives them a new role within the country. They are no longer intended for a small elite, whether as regards the origin of students or graduates' future careers. Second, the structure of society and the economy is in flux and citizens' mentalities are changing. This situation is neither new nor unique, since it is to be found in almost all countries, but the effect of both factors is much stronger in Mexico than in the other OECD countries.

It becomes apparent at times of crisis that the old ways of doing things are no longer appropriate. Crisis is thus an opportunity for change. For example, when higher education takes a broader social dimension, individual institutions can no longer define their missions according to institutional interests alone; they may have to accept being accountable of their results.

The first task of post-compulsory education is to train the men and women who will become the country's middle and senior managers and technicians. It is they who will be primarily responsible for the cohesion of the "civil society" that is still seeking its place in Mexico. We believe that developing the economy, combating inequality and placing the elite at the service of all are absolutely fundamental. As such, post-compulsory education needs to become less complex but more diversified in its objectives, less selective and fairer in its operation, more open to the outside world and more attentive to quality defined within the framework of a national policy.

The reform process itself plays a part in the strengthening of civil society. The role of the federation should be similar to that of an orchestral conductor: it should not get involved in the details but assume strategic responsibility for the entire system. The aim must be to advance a system which has been expanded at the cost of considerable effort and which now contains enormous riches, not least its human resources, from which to move forward. Those who work in the system are aware that the future depends to a very considerable extent on them.

However, within the post-compulsory education system as a whole, we believe that a clear distinction needs to be made between upper secondary and higher education. The objective of upper secondary education can no longer be regarded as preparation for entry into higher education, any other option being regarded as a failure. Here again, the aim must be to give pupils the technological and general qualifications that will enable them to take up intermediate positions in the economy and in society.

In higher education, many OECD countries are experiencing difficulties that are not very different from those facing Mexico. Although Mexico can to a certain extent

benefit from their experience, it can also teach them much in terms of the solutions it will find for itself.

In conclusion, we should like to repeat that the Mexicans have identified the options that need to be taken, many of them being included in their action programmes (see, *e.g.*, Chapter 6 of the Background Report). It has been our privilege perhaps, if not to see further ahead, then at least to have been in a position which has enabled us to go further, in our judgments and opinions, than is easily possible for the Mexican authorities.

NOTES AND REFERENCES

1. *National Science and Technology Policies: Mexico*, OECD, 1994.
2. *OECD Economic Surveys: Mexico*, OECD, 1995.
3. Thematic review of the first years of tertiary education, covering countries such as Germany, Australia, Denmark, France, Norway, Sweden, New Zealand, Japan, Portugal, United Kingdom, United States, etc. (to be published in 1997).
4. A flow diagram is given in Figure 2, Chapter 2 of the Examiners' Report.
5. The Mexican term could easily be translated in French by *moyen supérieur*. In English, the term "middle school" often applies to upper primary or lower secondary education and is thus misleading. Considering that Mexican readers will read the French original or the Spanish version, we opted for the use of the international terminology, referring to "upper secondary" or "high school."
6. See, for example, C. Ornelas and D. Port, "Recent University Reform in Mexico", *Comparative Education Review*, Vol. 36, No. 3, 1994.
7. We are concerned in this respect about the extent to which universities in the United States are regarded as references. Many families are already sending their children to American universities rather than UNAM to pursue or finish their studies.
8. And yet similar systems have existed in several OECD countries. In Japan, for example, we encountered preparatory schools in several private universities; there also exist such courses in some national universities, but they belong to the Education Faculties and have limited enrolments.
9. Though with very different lengths of study.
10. To obtain a more comprehensive picture, Canada and the United States, plus possibly Japan, should be added but most vocational training in these three countries is now provided at higher education level.
11. Terminal efficiency is the ratio of leavers from the last year of the course to the number of entrants *n* years before (n duration of the course). As the actual duration of studies is likely to be longer, on average, than the theoretical duration, in periods of growth in the size of age cohort this gives an underestimation of actual efficiency; in periods of decline, an overestimation; so that going from an expansionary period to a period of shrinkage, efficiency seems to improve. This applies of course to all levels of education.

12. Some Japanese universities have affiliated high schools, as we have mentioned, but the pupils are subject to the same tests and exams as other candidates.
13. *From Higher Education to Employment*, Synthesis Report, OECD, 1993.
14. Although in the case of Mexico, it would be useful to distinguish between them: at *licenciatura* level, the number of scientists as a proportion of *egresados* is much lower than that of engineers, whereas at lower levels, the relative positions are reversed.
15. We were told of one university which until 1994 used admission criteria that included social origin, candidates of more elevated origin being given preference!
16. We are aware of a UNAM study.
17. See Table 32 in the statistical annex to the Background Report.
18. *Reviews of National Policies for Education: Austria*, "Diversification of Higher Education", OECD, 1995.
19. *Review of National Policies for Education: Finland, Higher Education*, OECD, 1995.
20. UNAM carried out studies on this subject about its students.
21. *Oferta-demanda de ingenieros*, COSNET/SEP, 1994.
22. *Los profesionistas egresados de l'AUEM*, 1992.
23. Some universities ask them their opinion on the quality of teaching, a practice that should be encouraged.
24. *Diagnóstico y prospectiva de la educación superior in México*, Cámara de Diputados – Universidad Autonoma Metropolitana, 1994, p. 118.
25. See *Review of National Science and Technology Policies: Mexico*, OECD, 1994.
26. There are three levels of employment: assistant, associate, full professor. Recruitment at each level may be temporary or permanent, and acquisition of *definitividad* is clearly an important event.
27. This is also true for basic education: the continuing training offered by teacher training colleges and the National Pedagogical University should not be directed solely towards the acquisition of a diploma.
28. Updating curricula, training teachers, training researchers, reviewing educational provision, research and post-graduate studies, infrastructure improvement, administrative reform, information systems, diversification of funding, participation of the social and productive sectors, cultural initiatives.
29. *U2000*, 16 October 1995.
30. Philippe Perrenoud, "Formation initiale des maîtres et professionalisation du métier", *Revue des sciences de l'éducation*, Vol. 18, No. 3, Montréal, 1993.
31. Three of them are not formally autonomous and depend on the states where they are situated. Apart from the appointment of rectors, however, this does not seem to have very much real effect.
32. The practice is that countries under review report to the OECD Education Committee, about two years after the review meeting, about changes in the national situation in the

fields covered by the review and progress made in the implementation of the recommendations.

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MEXICO

Higher Education

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The OECD diagnosis presented in this respect leads to a number of recommendations concerning quantitative priorities, equity, quality and relevance, differentiation and flexibility, as well as staff development, financing principles and the steering and governance of the system and institutions.

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